MINING CONGRESS JOURNAL

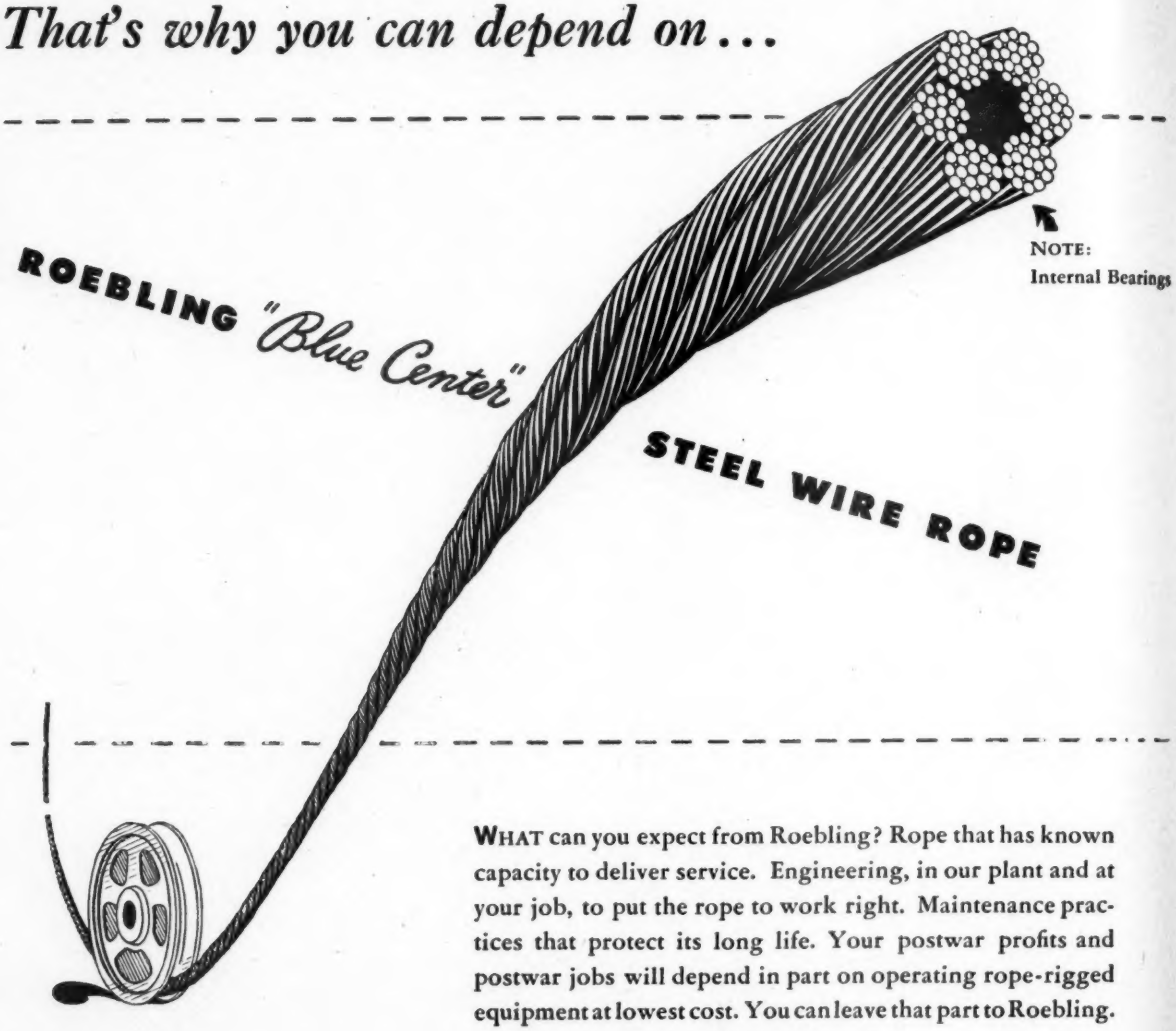
JULY 1944



A JOURNAL for the ENTIRE MINING INDUSTRY

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MINING CONGRESS JOURNAL

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From the coal fields:

Important articles on production engineering; track construction as it affects haulage performance; utilizing existing deep mine facilities to add to output by strip mining at the outcrop; plus a Coal Division report on trends in underground power costs.

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FRONT COVER—Two-Level Coal Strip Mining at Mackie-Clemens Fuel Co. operations at Pittsburg, Kansas.—*Photo Caterpillar Tractor Co.*

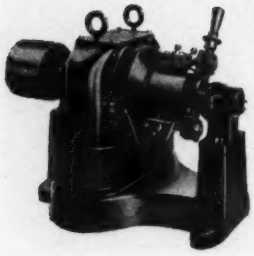
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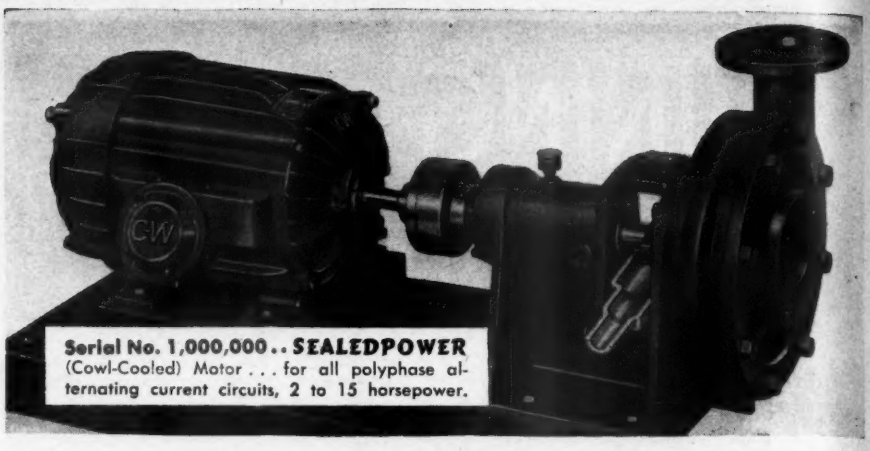
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Serial No. 1 . . . Crocker-Wheeler Motor, built in 1888.

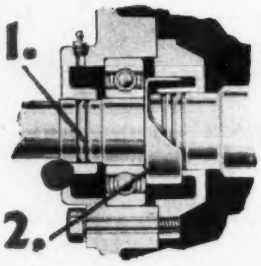


Serial No. 1,000,000.. SEALEDPOWER (Cowl-Cooled) Motor . . . for all polyphase alternating current circuits, 2 to 15 horsepower.

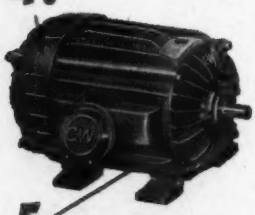
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PRODUCED BY CROCKER-WHEELER'S 56 YEARS OF EXPERIENCE







CROCKER-WHEELER FEATURES:

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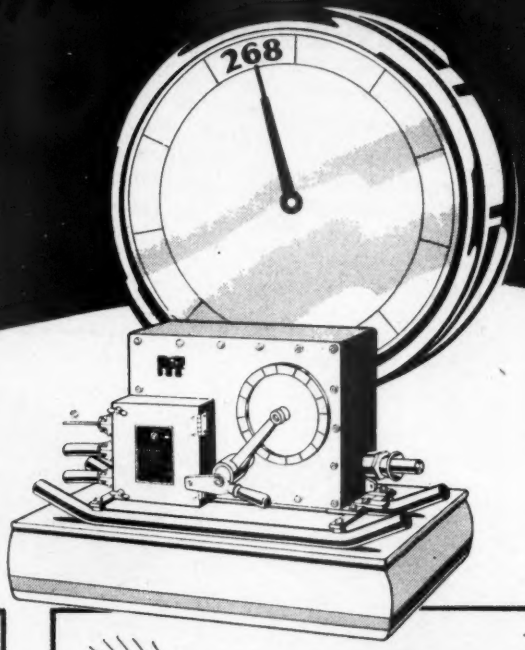
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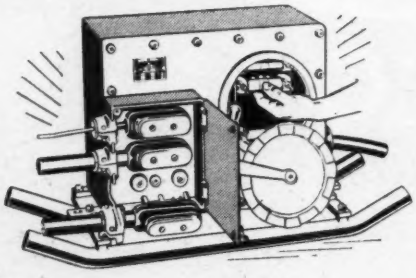

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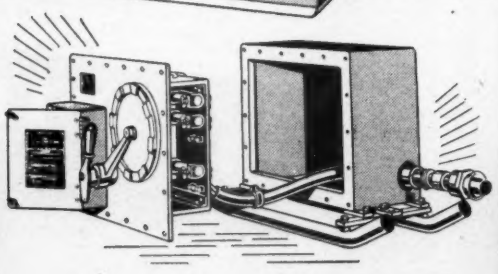
RUGGED BUT LIGHT WEIGHT

Weighs only 268 lbs. as compared with 450 lbs. and more of previous designs. Facilitates movement as face advances



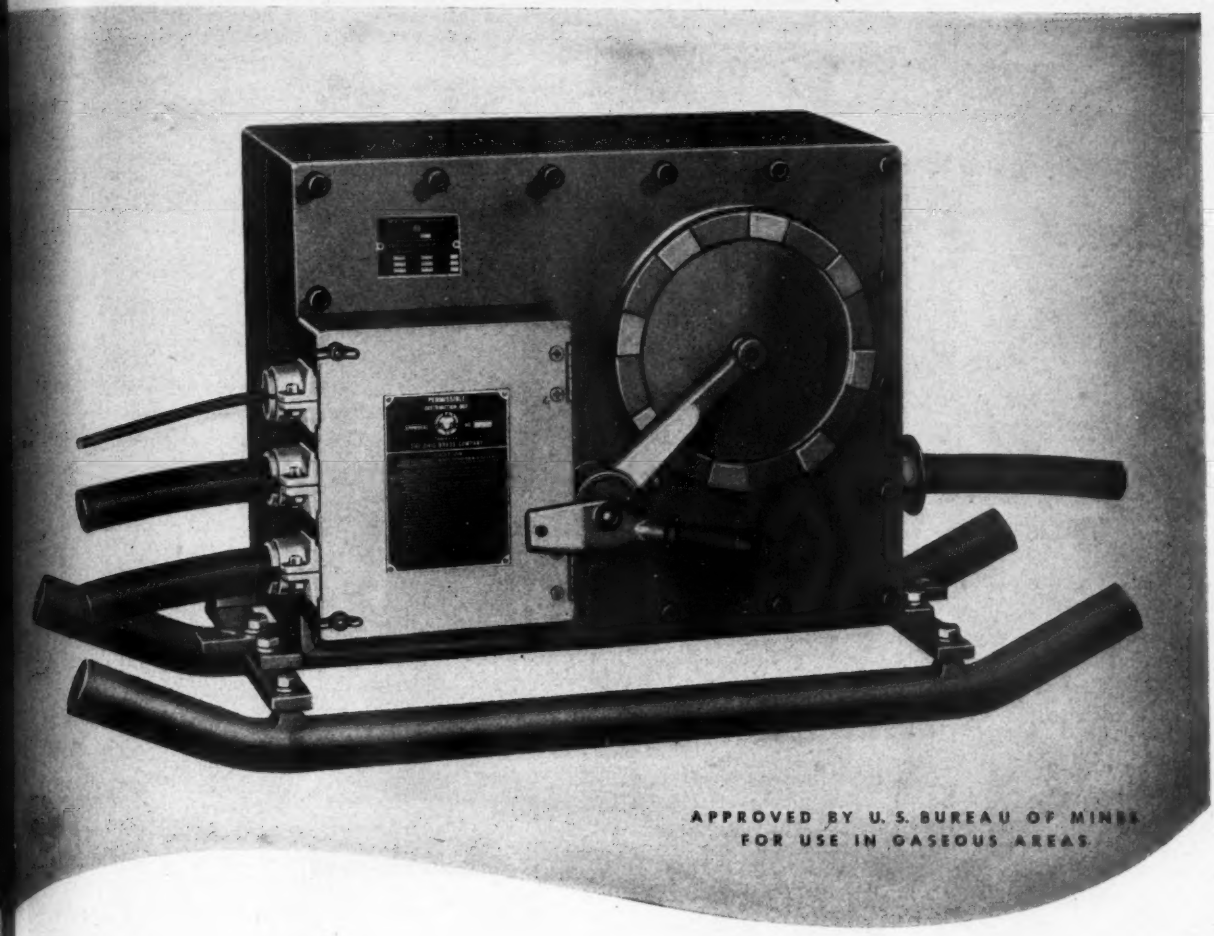
CONVENIENT HAND HOLE TO FUSE COMPARTMENT

Large hand hole makes it easy to change fuses Both hand hole and plug box interlocked with switch to prevent access with power "on"



ALL PARTS ACCESSIBLE

Entire mechanism mounted on cover—easily removed for inspection



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- Three circuits, two fused at 250 amp. and one at 30 amp. for overload protection.
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- Plug box entrance clamps take up strain on cable.
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- Available for either 250 or 500 volt service.

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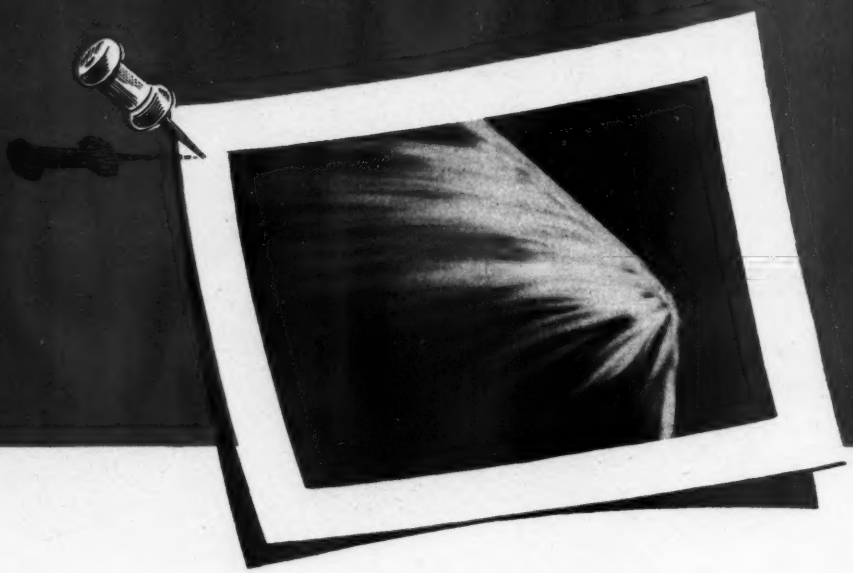
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SNAPSHOT of an explosion



HERE IS A STORY OF AN EXPLOSION—as told by the explosive itself. The narrow, white streak at the right is the path of detonation, flashing through the explosive at about 250 miles a minute! The feathery haze is a photographic record of white-hot gases bursting outward at tremendous pressures as high as a million pounds to the square inch.

Facts such as these are recorded, studied, and analyzed by Hercules scientists. Each day scores of research projects are carried on to broaden the knowledge and understanding of explosives. It is through constant, intelligent research that we endeavor to help you and thus benefit ourselves.

HERCULES EXPLOSIVES

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How to reduce track-laying time

—even with inexperienced crews

With the labor shortage acute, many mines are forced to spread their manpower thin. Experienced help is no longer plentiful for all operations. Yet even with a green crew, it's easy to lay mine track when Bethlehem No. 5 Steel Ties are used.

No spiking is required, for big, sturdy clips hold the rails in place. A hammer blow is all that's needed to knock each rotating clip over the rail flange. The clips provide automatic, permanent gaging—a time-saving feature that means genuine economy in hours and dollars both.

Bethlehem No. 5 Steel Ties are designed specifically for 40-pound rails. Weighing five pounds per foot of section, they're rugged enough to stand the beating dealt out by mechanized cutters and loaders, yet light enough to be handled easily by your track-laying crews.

For the heavier room track that is now so common, Bethlehem's No. 5 is a "must"—particularly where bottom conditions are not of the best. If you haven't yet tried these rugged, shock-resisting ties, why not investigate? They'll save you time . . . money . . . manpower.



No trick to it at all. No spiking, no gaging. A light blow knocks the clip into place —and the tie is held fast to the rail.

MORE THAN EVER YOU NEED Securityflex (BUNA)

...the Twin Parallel cable with these exclusive construction advantages



This cross-section shows Anaconda's twin parallel Securityflex cable with self-contained ground wire. This special cable has only slightly increased diameter, so that usual lengths may be handled on standard conductor reels. It offers a simple, convenient method for grounding loaders, conveyors, cutters, etc.

for example . . .

1. *Special D-shaped insulation* developed by Anaconda cable engineers. Prevents twisting. Impossible for one conductor to ride over the other and cause failures.
2. *Time-saving Breaker Strip* to separate the two conductors. Connections and splices can be made with greatest speed and ease.
3. Maximum flexibility . . . thanks to Anaconda Herringbone compensating construction.
4. Rugged Seine Twine reinforcement webbing for greater strength and to prevent tearing of jacket.
5. Buna jacket instead of rubber, as formerly —due to the wartime elimination of rubber in all mining cable. This fact, of course, *makes Securityflex construction features even more important than ever.* 44247

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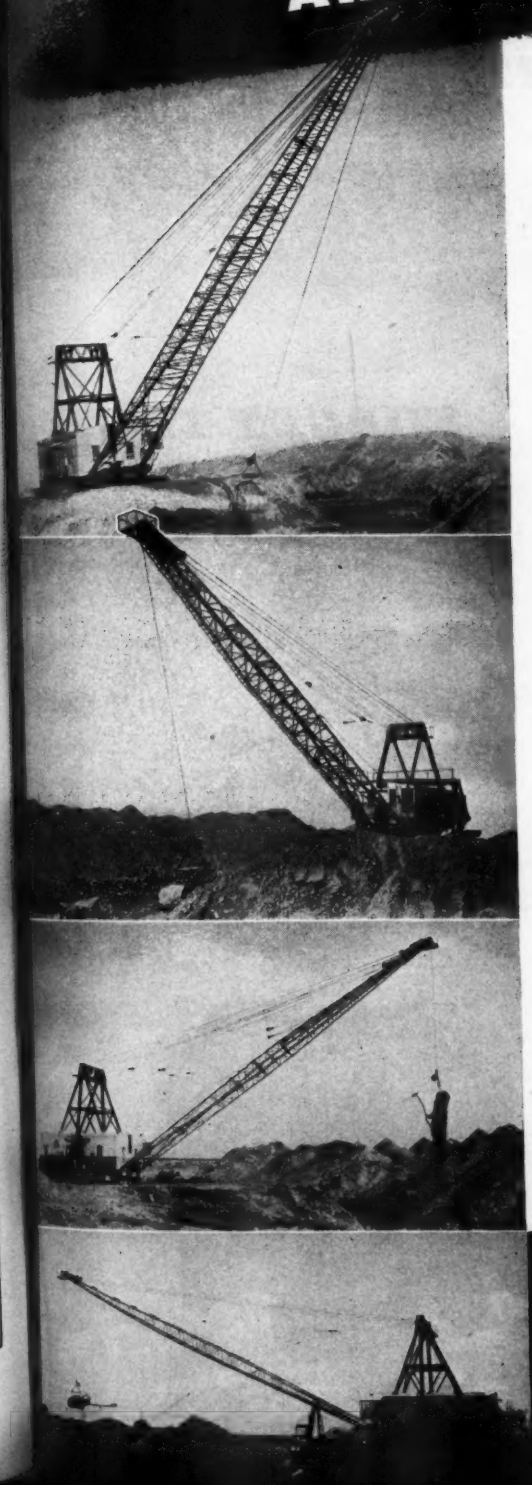
Tuffy ends for mining machines are union-clipped for easier installation. H-44

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FOR EXTRA LONG REACH AND *Where* CRAWLER MACHINES ARE NOT ADAPTABLE



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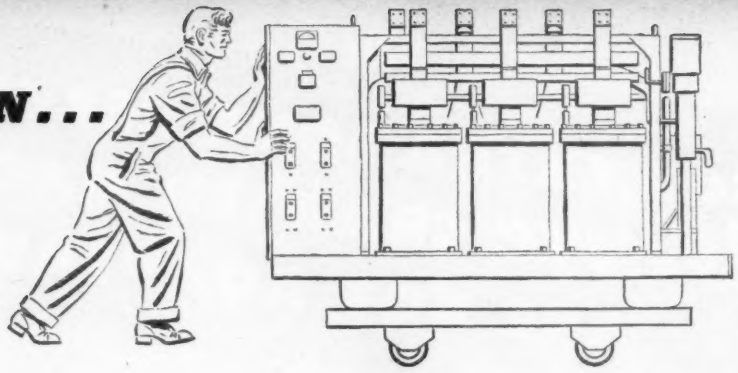
Open-pit mine operators will find the MARION WALKER dragline an indispensable machine for the reworking of ore or coal bearing properties abandoned because of excessive overburden, where it is advantageous to respot overburden some distance from the original cut, or in the opening of new pits. The MARION WALKER dragline is offered in sizes from 6 cubic yards to 30 cubic yards. It works effectively even under adverse ground conditions where, because of its exclusive walking principle and its low bearing pressure, speed of movement and maximum mobility are assured. The MARION WALKER'S construction, plus its low fixed charges, fuel economy, minimum labor requirements and low maintenance cost, make it a worthy companion to the broad MARION line of dependable, high yardage producing open pit strip mining shovels and draglines.

IT PAYS TO MODERNIZE WITH MARIONS

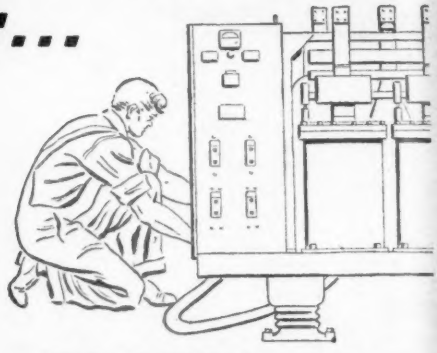
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Simplify your power conversion equipment. Save time—save money—save space. Specify Westinghouse Ignitron Rectifiers—a product of Westinghouse Electronic Research.

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IN THE MINING INDUSTRY

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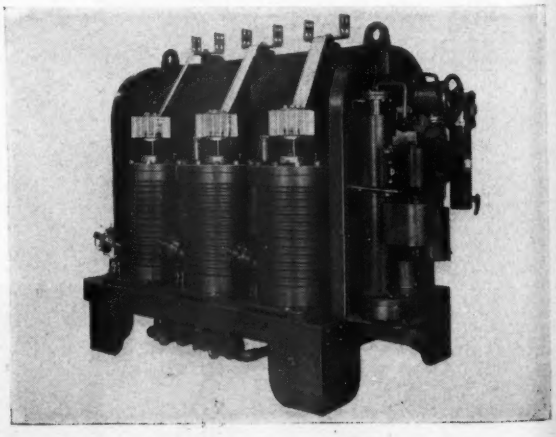
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WESTINGHOUSE

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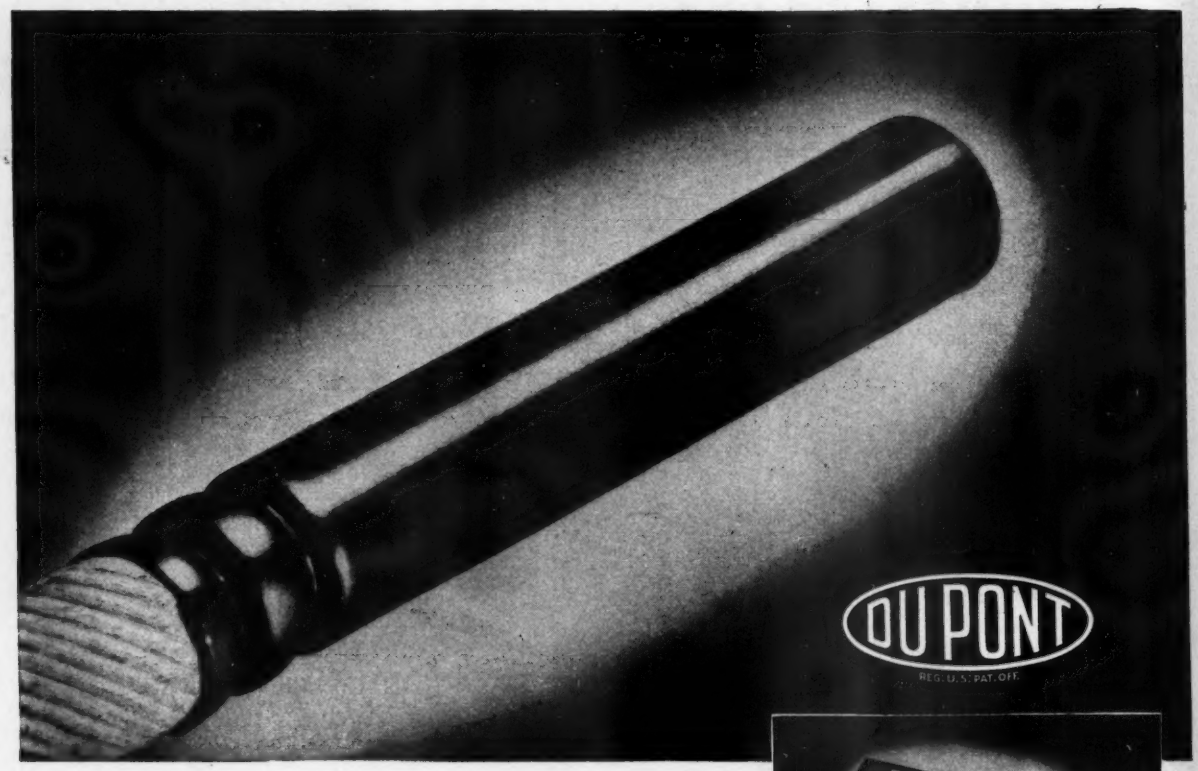
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IRONCLAD
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since horseless carriage  days



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Du Pont Blasting Caps are conveniently packed in a safety box of improved design. The package protects the caps which lie flat in the box. Their open ends are guarded against grit, sparks, dampness or water. This reduces the possibility of accidental detonation and lessens chance of misfires resulting from wet caps. Caps are easily and quickly removed from the box.

DU PONT BLASTING CAPS

Charge Them From Off-Peak Power

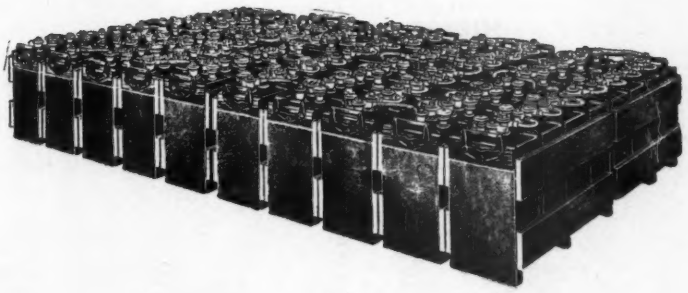
When you use Edison Alkaline Batteries as the power units of your battery-operated haulage equipment, you will find that an off-peak period of 6 to 7 hours per day is usually enough to get all the charging done with low-cost power. That is normally time enough for full recharge of an alkaline battery.

The charging can also be done direct from the d-c power lines through suitable resistors, because alkaline batteries do not require critical adjustment of the charge rates.

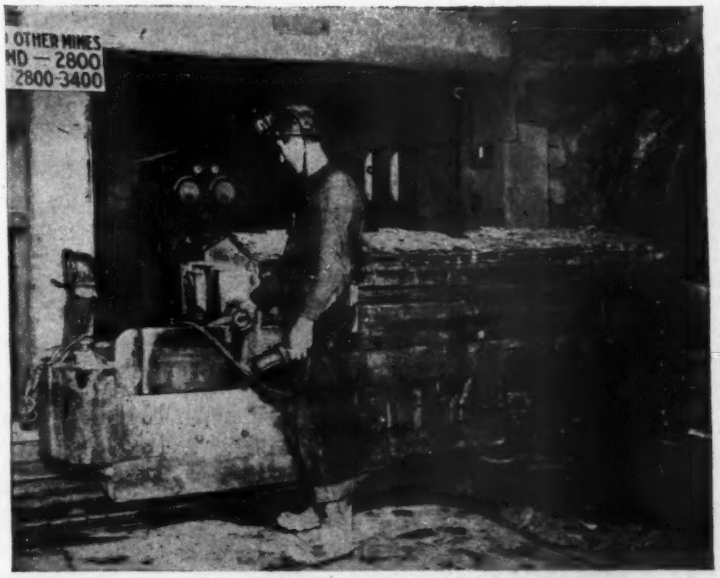
Yet this is only one of the operating advantages of alkaline batteries. Their steel cell construction successfully withstands rough usage. Their electrolyte is an alkaline solution that is a natural preservative of steel. Their electrochemical principle of operation is free from self-destructive reactions. As a result, they stay on the job and out of the repair shop; give longer service life than any other type of battery; cut annual operating cost.

Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.

Edison
ALKALINE BATTERIES



Typical 80-Cell Locomotive Battery



The alkaline battery in this trammer is regularly charged through a resistor from the d-c power supply on the level where it operates.

U. S. ROYAL

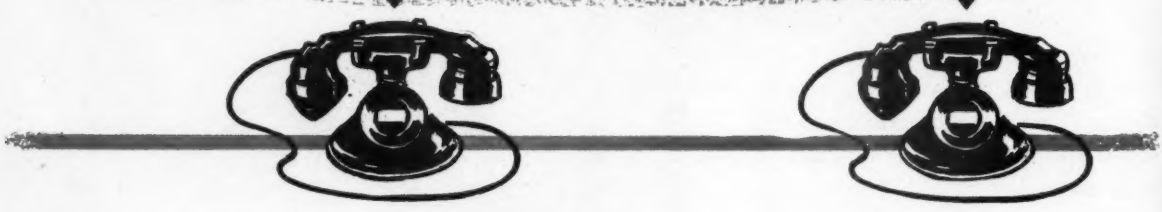
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MINING MACHINE AND LOCOMOTIVE CABLES

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MINING CONGRESS JOURNAL

Published for the Entire Mining Industry by The American Mining Congress

S. A. TRENGOVE, Editor

Volume 30 JULY, 1944 Number 7

The Ultimate Goal in Safety

THOSE who have followed the progress of mine safety from its earliest beginnings have seen the severity and frequency of accidents greatly reduced. For a number of years the improvement in accident frequency continued until it reached, a few years ago, what someone has been pleased to call "the irreduceable minimum." The graphic representation of the facts indicates a constantly downward sloping curve which has subsequently leveled off, with some folks drawing the general conclusion that we have about reached the limit in reduction of accidents. Others object with an emphatic, "No!"

In the sincere endeavor to eliminate the causes of accidents, a vast, imposing and generally effective array of safeguards and mechanical devices have been put into use with telling effect. This particular phase of safety engineering has definitely proven its worth, and must, therefore, continue vigorously as new machinery is introduced and new and unexpected hazards arise. At many a safety conference we have been privileged to see demonstrated a large number of new devices with definite accident prevention qualities, designed as answers to potential accidents. We hope that such progress continues with ever-increasing quality.

We must not, however, be led to believe that accidents can be prevented solely through the use of mechanical safeguards. If this were true, it is conceivable that all operations could be so designed that when all the contributing elements necessary to an accident were present, the operations would be so controlled as to come to a stop and could not go forward until corrective measures had been taken and the endangering factors removed. This delightful Utopian state, while pleasant to contemplate, is hardly attainable. While much of the answer to safe working conditions lies in guards and warnings and rules of safe conduct for our daily tasks, there are other sources toward which we must look for the ultimate goal of total freedom from accidents.

In the analyses of mishaps, we often find the direct cause set down as "man failure." This generalized phrase indicates that the man was careless, the man was preoccupied with personal affairs, or simply that he was one prone to take a chance. By dismissing the discussion of an accident by such a statement, we are passing up a field of investigation which contains much in the way of promise in bringing the accident frequency and severity curves down to the zero line for long, happy periods. As for the careless man, we must keep up a relentless campaign of education and good example. The man worried over personal affairs can be aided by friendly advice and guidance. The chance-taker is definitely in need of someone to put on the brakes for him. We recognize them all and should extend ourselves accordingly.

We all know of safe workmen who just simply never have an accident. This isn't because they are not exposed to the causes of accidents as much as their fellow workmen, but is attributable rather, to an instinct for self-preservation brought about either through pertinent early training, or heeded experience. These men provide strong proof of the frequently uttered contention that all accidents due to human causes *are* preventable.

If it be true that men can be educated to the point of safe conduct, and we think it is true, the time to begin training our workmen is during the early formative stages of childhood. We have only the highest praise for the excellent work already done along these lines. Paralleling this line of thought, the current attempt being made in certain quarters to give credit in our schools for health, dental and physical fitness "just like a credit is given for algebra," should, we believe, be accompanied by similar credit for safe conduct or safe thinking. If the youth of our country who will later be performing the tasks of industry are brought up with the proper "safety sense," we will have in our mines and industrial plants an increasing number of the kind of workmen who just don't have accidents.

Elsewhere in this Journal, we present reports on two recent outstanding safety conferences, the 35th Annual Mine Inspectors Institute and the 21st Annual Conference of the Lake Superior Section of the National Safety Council. Both of these pointed significantly to better and more thorough training of all mine employes in safe practice and procedure, and showed where accidents could have been prevented if orderly thinking (trained good judgment) had been exercised. In spite of excellent rules set up—albeit based on the sad precedent of some fatality—preventable accidents seem to occur and re-occur. We hold the opinion that, in addition to the use of modern safety devices and apparel, workmen trained "from the cradle up" to sense and avoid accidents, offer the most obvious, as well as the most nearly perfect solution to attainment of accident-free industry.

We look forward to much more of an all-out effort in all phases of safety endeavor. We hope eventually to see the safety program embrace the entire populace as we have outlined. Management and labor must forget any existing incompatabilities in the matter of a program designed to accomplish the wanted results, and we must seek to develop an increasing number of safe workers until we reach our ultimate goal of an accident-free industry.



Surface plant and operations of Wilfley Leasing Company, Summit County, Colo.

Explorations For Mineral Reserves

The U. S. Geological Survey keeps its program of mineral resource investigations on a flexible basis, shifting emphasis in response to changing needs. Work in Colorado described as illustrative of national operations

By G. F. LOUGHLIN
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ALTHOUGH the war may last much longer than we would wish, an increasing amount of attention is now being given to post-war plans, or to the question "Where do we go from here?" Optimists may think they know where we are going; pessimists may think that we just aren't going anywhere; but, as is commonly true, those who really think on both sides of the question are likely to take a sane middle course and to adapt themselves to changing conditions, either avoiding obstacles or finding some means of overcoming them.

The Geological Survey is only one of many organizations that are considering post-war plans, and it is shaping its course accordingly. With its 64 years of experience as a background, the Survey has kept its program of mineral-resource investigations on a flexible basis, shifting emphasis in response to changing needs, and it will continue to do so. During the war years, for example, it has been focusing its attention mainly on work called for by the different war agencies; as the need for work on one mineral has slackened, personnel has been shifted to projects that need increasing attention. This practice is illustrated by its manganese program, which at first took the full time of more Survey geologists than that of any other war mineral, whereas today only three geologists are giving continuous attention to manganese. In contrast, mica deposits at first engaged the attention of only two geologists, but today 18 geologists are devoting the bulk of their time to mica and such closely associated minerals as beryl and tantalite, which are found in pegmatite veins.

The survey's work on copper, lead, zinc, iron and fluorspar deposits was also greatly increased during 1943, and present indications call for the undertaking of a number of long-term projects. In all this work the objective has been to study and interpret the geologic features that have controlled the deposition and distribution of ores and minerals and, with that work as a background, to suggest places for exploration by drilling and other methods and to interpret the results of exploration. This work has led to the outlining of substantial reserves in some of the districts investigated, and in others to the conclusion that further exploration work on certain deposits is not justified.

The concentration of company operations on increasing output during the last few years has necessarily involved the neglect of exploration, with respect to the further development both

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of single mines and of mining districts as a whole. The reserves of heretofore abundant minerals have thereby been seriously depleted, and the present activities of the Geological Survey are therefore being planned and conducted, so far as possible, to compensate for this condition. This program calls for intensive studies or restudies of both the larger and the smaller districts. The work done in any district years ago, even though it were above criticism at the time, is subject to thorough review in the light of new developments, changes in economic conditions, and the advances made in the application of geology to mining.

A good deal is being said about the nation's dwindling reserves of a number of metals that have heretofore been mined in great quantity. There can be no doubt that a country that has been so well prospected as the United States and has made so tremendous an output of so many metals, industrial minerals, and mineral fuels cannot maintain its accelerated pace forever. It should also be admitted that the most easily discovered deposits have already been found and largely depleted. These admissions support the pessimists, but have the pessimists given adequate consideration to the past as well as the future dependence of mineral output on continuous exploration?

On many different occasions, economists have wondered how long the supply of a certain mineral commodity would last, either in a single district or in the nation as a whole, but usually a dwindling output has been revived through explorations. This general experience, no doubt, helps to account for the optimist's viewpoint that, whenever you need more of anything, all you need to do is to go out and find it, as if finding were perfectly simple. Those who take the middle course emphasize the nation's increasing dependence on well-planned exploration for the extending of productive ground in well developed districts and for the more difficult and less hopeful problems of discovering new districts.

Exploration for mineral deposits and the development of them are primarily geologic problems, particularly in areas where the deposits are deeply concealed. No amount of geologic application will discover ore where none exists, but there is much more likelihood of finding deeply concealed deposits through prospecting based on a thorough analysis of geologic conditions than by hit-or-miss efforts based on inadequate information. This remark is especially well supported by the Geological Survey's experience during the last few years in its studies of "strategic and critical minerals." It reminds us that a little knowledge, whether of geology or mining, may be a dangerous thing; ill-advised exploration is likely to be costly and disappointing.

It is the Geological Survey's duty to bring together, analyze and interpret geologic facts and to present its interpretations so as to lay the best foundations for exploratory work. It is also the geologist's duty, whether in company or government employ, to guide the exploratory work. Complete information on any one region may never be available, but a judicious analysis of available information will serve to encourage or discourage exploration by those equipped to carry it out.

Cooperative Arrangement Helpful

The part played by the Geological Survey in the mining industry of Colorado serves as an illustration of the part that it plays in the nation as a whole; in fact, the Survey's opportunity in Colorado has been unusually good because of the cooperative arrangement that has permitted continuous work in the state since 1926. There are some never-say-die optimists who maintain that Colorado's mineral deposits "have not been scratched," but to quote C. W. Henderson in his professional paper on mining in Colorado, published in 1926, the state "has been well scratched, and even intensively perforated with holes ranging from 10 to 3,000 ft. in depth, and with tunnels as much as 5 miles in length." In spite of all the previous scratching, however, the state continues to contribute very substantially to the nation's mineral output.

Some districts, to be sure, have experienced serious declines in output and some have been dormant for several years, but whether they are dead or just sleeping while awaiting improvements in demand and mining technique depends not only upon economic conditions but upon the thoroughness of past exploration and on the sufficiency of guides for further exploration. Kokomo, for example, was dormant for a long time, though its sleep was briefly interrupted by an effort to mine low-grade replacement bodies of zinc ore in limestone at a time when market conditions were not very favorable. Recently, however, under the stimulus of the war demand for zinc, the district has reawakened and the detailed geologic work by A. H. Koschmann in 1943 and F. G. Wells in 1936 has proved that, in addition to the three groups of closely spaced limestones already recognized, the existence of a fourth group has been established. The recognition of this favorably situated fourth group enlarges the field of exploration and improves the chances of finding significant quantities of ore. The Kokomo project will be continued next summer; in the meantime, a geologic progress map has been issued for the benefit of the interested public.

Work was also resumed in 1943 by the Geological Survey in the Rico district, Colorado. There D. J. Varnes' special attention to the thick limestone (in which much of the recent exploration has been centered) has proved the presence of an unconformity which has eliminated the limestone from some parts of the district. His progress report and map recently issued will show the areas that are unfavorable and those that deserve more intensive prospecting than they are receiving.



Denver Equipment Company's new operations on top of pass between Silverton and Ouray, Colo.

In the Silver Plume district E. N. Goddard, supplementing in 1943 the work that he and T. S. Lovering had previously done in the mineral belt of the Colorado Front Range, has prepared a brief report recommending places that deserve further prospecting. This report is now in open files at Denver and other convenient places.

The geologic map based on recent work by Lovering and Ogden Tweto in the Gilman-Red Cliff district will also be made available soon, either by the release of a small preliminary edition or by placing it in open files in Denver and elsewhere. This map brings to light certain structural features that appear to have had more influence on the localization of ore zones than was formerly realized, and may therefore aid materially in future exploration.

The Survey's report on Leadville, although published 17 years ago (in 1927) supplied the information that led to the present operations of the Resurrection Mining Company. It also supplied the principal geologic information, outside of company records, on which the justification for the new Leadville drainage tunnel could be based.

In contrast to the work in these districts, all of which except Silver Plume are characterized by large replacement ore bodies in limestone, Burbank's work in the Bonanza district and in the San Juan region and that of Lovering at Nederland have included intensive studies of the alteration of volcanic rock and its application as a guide, especially in long-range prospecting. Burbank in his latest reports on the San Juan region has described and discussed this and other guides, and at the same time has made some of the most outstanding contributions to the science of ore deposition. His maps on the Uncompahgre and the Red Mountain, Sneffels, and Telluride districts have just been supplemented by a similar very detailed map by Vincent Kelley on the Mineral Point area. This map is now in proof and, together with an explanatory text, will be available shortly.

In the adjoining State of Utah, Lovering has been making a similar study of altered volcanic rocks, correlating their significant features with the distribution of known ore bodies in underlying limestone. This study supplements the work done some years ago by Paul Billingsly of the International Mining Company, which led to the discovery of the North Lily ore body in the East Tintic district. Studies such as those of Lovering and Burbank will obviously not be guarantees that ore will be found beneath any particular spot; however, they will not only indicate favorable ground but will help materially toward eliminating areas in which the volcanic rocks at the surface, even though intensely altered, do not possess the particular characteristic products of alteration that are most directly associated with ore deposits. This method of approach may eventually aid prospecting in many districts throughout the West, where altered volcanic rocks are prevalent. It will tell where not to go as well as where to take a reasonable chance.

One of Colorado's leading mine operators, when discussing the Survey's cooperative work in the State several years ago, said that to him the Survey geologists had been most helpful in telling "where not to go," thereby enabling him to restrict his spending of money for prospecting to places where there was at least a fair chance of success. The value of such negative, or even discouraging, information should not be overlooked.

When the cooperative work in Colorado was begun, 18 years ago, some enthusiasts expressed the hope that it would lead to the establishment of a new mining camp. The work thus far, however, has been largely confined to more detailed resurveys of old districts, and no new camp of first magnitude has been found yet. In this respect the Survey geologists, at least, are not seriously disappointed, although they would obviously be decidedly pleased if their work had led to the development of a new camp. The results attained thus far tend toward confirmation of the idea that there is much more likelihood of finding additional deposits by extending exploration in the leading districts than by deliberately searching for brand new districts.

Nevertheless, if new districts are to be found where ore does not crop out, and has not been merely overlooked by prospectors heretofore, the kind of work that the Survey geologists have been doing in correlating the different kinds of rock alteration with underlying ore bodies will be among the most helpful guides to long-range or deep prospecting. Such research work combined with the thorough mapping of structural and stratigraphic features will point out the places where geologic conditions are most favorable for the occurrence of ore either at shallow or great depth. This thought of long-range exploration will doubtless be given increasing attention as the needs for finding new supplies of ore increases.

Another interesting example of geologic exploration for ore, and one that differs in the general approach from the work in the Western States is the project now being conducted by the Geological Survey in cooperation with the Bureau of Mines in the search for concealed deposits of the aluminum ore (bauxite) in Central Arkansas. There the bauxite was derived through the prolonged weathering of the igneous rock nepheline syenite during a period characterized by the subtropical climate. Some of the bauxite remained where it was formed, on the syenite surface, but much of it was moved for appreciable distances and redeposited along tributary valleys that headed in the syenite areas. Since that period, the erosion surface became buried beneath a thick series of sandstone and shale, and only a small part of it has been re-exposed by erosion.



Lucky Strike Mine at Kokomo. One of the new properties in Summit County, Colo.

The geologic problem was, first, to locate and map the topography of this buried land surface, and then to point out the positions of the tributary valleys that headed in the syenite areas. In its first stage it called in part for surface mapping around exposed masses of syenite, but largely for the study and correlation of an immense number of drill records which the mining companies of the district generously made available. Here, as in almost every district and mine in the entire country, the companies have been most helpful to the Geological Survey; it is largely through such

mutual help in studying the anatomy of developed ore bodies and in using the information in the formulation of methods of further exploration that the Geological Survey has been able to play its part in the exploration for mineral deposits.

With this information as a guide, locations for further drilling were made to determine the courses of the valleys already found and to locate undiscovered valleys with suitable courses. Once such a valley was located, further drilling was concentrated, first on the search for bauxite and then on the determination of the outline, thickness, and grade of the ore bodies. The area explored was further limited by the depth of practical mining for this particular kind of ore. This method has led to the blocking out of more than 10,000,000 tons of bauxite ore in "wildcat" ground outside the areas in which mining and exploration has been conducted by mining companies. In addition to the bauxite ore of present commercial grade, immense tonnages of low-grade bauxite and high-alumina clay have also been disclosed. This work, represented by a recently issued map, has been under the immediate direction of R. P. Bryson and Mackenzie Gordon.

Pegmatites

Another group of projects worthy of special mention involves the study of pegmatite deposits, from which our supplies of domestic mica, beryllium, lithium, and tantalum are obtained, mainly in the Southeastern States, New England, and several Western states, including South Dakota, Colorado, and New Mexico. Until this group of war projects was undertaken there had been only a negligible amount of geologic work that would serve as a practical guide in the prospecting and mining of pegmatite deposits. Since January, 1942, however, 388 special reports, most of them confidential, have been sent to the war agencies, and a large number of preliminary geologic maps have been released to the interested public, pointing out the distribution and geologic control of pay shoots of these different minerals. Owing to the lack of experience of many of the operators engaged in this kind of mining, and to the general lack of detailed geologic information on mineral deposits of the pegmatite type, it is believed that the Survey's work on these deposits has been especially helpful. This kind of work is illustrated in the paper on pegmatite deposits in Colorado and New Mexico by R. H. Jahns and J. B. Hanley.

Fluorspar, substantial quantities of which are also mined in Colorado and New Mexico, is another mineral the demand for which has risen sharply and the mining of which has been materially aided by the Survey's work, particularly in these two states and in Kentucky. J. S. Williams and Doak Cox of the Geological Survey have outlined the Survey's contribution to this part of the war program in Colorado and have shown examples of the kind of work that the Survey is doing on war minerals in general.

Mineral Fuels Involve Special Problems

Mention should be made also of the Survey's work on mineral fuels. This work was greatly curtailed in favor of more urgent war work until July, 1943, but the great increase in output of petroleum, together with the declining rate of discovery of additional oil occurrences in new fields to compensate for the depletion of developed fields, led to the stepping up of the petroleum program during the last half of 1943. This work, planned as in the past so as to supplement and not duplicate the work of company geologists and of other public organizations, and aided by the supplying of much sub-surface information by the oil companies, is now making good progress. Thus far, seven preliminary geologic maps and charts have been issued and several more will appear soon. It is aimed especially to point out stratigraphic conditions in undeveloped regions that are most encouraging for exploration. With petroleum, as with the domestic ores and industrial minerals that have been abundant in the past, the question of future domestic supplies in the United States is serious. The maintenance of output obviously depends on future exploration, which in turn is becoming increasingly dependent on regional geologic exploration.

It would be tiresome to cite more examples. Let it suffice to say that the Survey's work, especially with reference to ores and industrial minerals, has been focused in part on the intensive study of single deposits, closely related groups of deposits, and on districts or regions with the objective of indicating places where prospecting, whether shallow or deep, seems most worthwhile. These studies include, as an important part, the estimation of mineral resources in the ground. It would be premature and in part a breach of confidence to express these resources now in tons of ore or metal; however, the recent discoveries based on the combination of geologic work with drilling and other methods of prospecting have helped materially in increasing reserves; furthermore, the finding of a number of places entitled to further prospecting in the light of recent geologic work should lead the way to still further increases. Although the surface, not only in Colorado but in other states, has been "well scratched," this work, besides helping to eliminate places that are not worthy of further scratching, points the way toward longer scratches in some districts and deeper scratches in others. It may also point out areas, hitherto not fully appreciated and therefore not scratched at all, that deserve a thorough scratching whenever the cost of deep prospecting is justified.

There is one striking thing about estimates of mineral resources; estimates made by those best informed are likely to be too small. The estimate of oil resources made by a group of the best informed petroleum geologists in 1922 concluded with the inference that consumption at the rate maintained in the early '20's would practically exhaust the known and expected supplies in about 20 years; however, the output and the estimated reserves have almost steadily increased ever since. Later estimates have also proved to be too low, although the recent decline in discovery of new fields prompts the suspicion that the latest estimates are closer to the truth.

As geologic factors controlling the occurrence of ores and nonmetallic minerals are in general more complicated than those controlling the occurrence of mineral fuels, it is correspondingly more difficult to make fair or unbiased estimates of undeveloped resources. Some large deposits are so arranged that their outlines can be readily determined and their reserves closely estimated, but in most districts the ore shoots, though individually small, occur in groups or zones, and the thorough outlining and testing of promising ground is a slow, expensive operation. Some well-managed companies who operate in such districts keep their development of reserves a few years ahead of their needs, without attempting to estimate total reserves. Obviously, well-founded estimates of discovered ore today must fall far short of the total but unknown resources.

Any attempt to indicate the nation's total mineral resources in terms of tonnage must necessarily involve a great deal of guesswork, both as to total quantity of any metal or mineral and as to the percentages of it that can be mined under different economic conditions. Such guesswork, however, is helpful in making us realize how much we have yet to find out; it should be followed up by adequately detailed geologic studies that will indicate the places where further prospecting, whether shallow or deep, is worthy of consideration. This is one of the kinds of work that the Geological Survey intends to pursue to the best of its ability, and in which it will depend on the continued cooperation and support of the mining industry.

Production And Distribution Conditions In The Pocahontas Field*

Evaluation of current conditions indicates that the sole cause of lagging production is lack of manpower

By ROLAND C. LUTHER
Vice President
Peerless Coal and Coke Company

To say that the coal situation today is confusing and serious would indeed be a gross understatement of fact. So many conflicting versions of the threatened coal shortage in the country are being circulated from Washington and within the industry, that it is most difficult to really determine where we stand today—let alone estimate what conditions will be three or four months from now.

The many cries of "Wolf, Wolf," about the coal shortage are probably most strongly directed at the Smokeless coal industry and, in particular, at the Pocahontas Field. It cannot be denied that the Pocahontas coal supply situation is now tight because the demand for this fuel has expanded so tremendously due to present war conditions. However, just how acute is this shortage situation today and what will the outlook be between now and the first of the year? How will each one of us in the mining and distribution branches of the industry be affected?

No one, I believe, knows the whole picture; however, we can look at the present and after an evaluation of current conditions, try to project ourselves into the future with a better chance of making a more correct appraisal than would be the case if we did not have the base from which to start.

Being an operator in the Pocahontas Field, I may be able to bring to you a more complete idea of the situation at the present time as concerns this particular coal so that you may have a more nearly correct base from which to evaluate what is facing us in the future. The situation as I describe it represents my own honest opinions because, although our mines belong to the Government, we are possibly better off than some government employes in that what we think and say are not subject to bureaucratic censoring—yet!

The needs for coal in this war emergency period have surpassed anything we have ever before known. Last year this country produced over 589,000,000 tons of Bituminous coal, which was the greatest tonnage ever mined. This year, through May 13, the industry produced 222,835,000 tons which is about 10,000,000 tons ahead of last year's record production. I think it can be said that the industry has done a pretty good job of producing for war, but even at that, we are told that we are not doing well enough. Consumption is running higher than production; and therefore, the outlook for a real shortage is serious indeed.

Pocahontas Losses are Important

The Pocahontas Field is not as fortunate as the coal industry as a whole, because it is running behind last year's production. In the year 1943, from January 1 to May 13, we produced 12,602,164 tons while this year in the same period we produced 12,060,719—a loss of 541,445 tons. This loss resulted despite the fact that we have experienced no shut downs this year and have been operating all year under the nine-hour day, six-day week schedule. This compares to last year with a seven-hour day, five-day week until February 15, followed by a seven-hour day, six-day week until the end of this period.

Here is a serious situation with the demand running ahead of last year! What is the reason for this drop in tonnage? It is not because of dwindling reserves of Pocahontas coal, since there is a plentiful supply in the ground and new seams are being opened continually—thus adding to the area of presently available Pocahontas coal at hand.

The sole cause of this condition is lack of manpower in the mines! This lack of manpower stems from two main causes: the draft; and excessive absenteeism among the men remaining on the payrolls.

Since 1942 the Pocahontas field labor force has been reduced steadily until today we only have 75 percent as many men. This in itself represents a substantial loss of tonnage, but when we add to this the fact that our absenteeism percentage has risen from a normal of about 5 percent for coal miners several years ago to 26.9 percent for the period May 1-13, the magnitude of this manpower loss becomes more apparent. In other words we only have 75 percent of our regular labor forces on the payrolls and only 75 percent of this labor force is available to produce coal; the net result being that we now have an operating force only 56 percent as large as in 1942. How can we produce record tonnages when we are only half manned?

How is it possible for such a condition to exist when our Government tells us that we must have this coal to win the war? The draft has taken about 5,000 of our best young men, and since coal mining is a young man's business this manpower loss is far more serious than mere numbers would indicate. Many of our draft boards would not have inducted so many men when they saw the resulting loss in manpower, but Washington could evolve no definite policy of deferment; and as a consequence, we lost the men. Now a more definite deferment policy has finally been evolved which protects our men over 30 and makes possible deferments for men from 22 to 30 who have had over three years' mining experience. However, since most of our young men under 26 years of age have already gone, this is much like locking the barn after the horse is stolen.

With the draft problem apparently clearing up somewhat at this late date, our biggest problem is probably absenteeism. Instead of improving,

* Presented to the Ohio Coal Conference Annual Convention, Columbus, Ohio, on May 25, 1944.

this problem is steadily growing more serious as is shown by the fact that since last October the absenteeism rate has risen from 23.8 percent in that month, to 26.9 percent for the first two weeks in May. To further illustrate this trend, I find in our own case the following figures for coal loader absenteeism: 1941, 9.2 percent; 1942, 11.1 percent; 1943, 14.3 percent; 1944 through April, 17.6 percent. These figures are of course, averages, and our records show that the night shift averages nearly 30 percent layoffs while on certain days such as Saturdays the rate has run up to 90 percent.

The causes of such an abnormal absenteeism rate are numerous and difficult to accurately determine. Much of it is caused by the fact that the men cannot seem to understand how important their jobs are in the successful prosecution of the war, both on the battle front and the home front. Our Product, coal, is too far removed from the final shape in which it goes to war—such as a battleship—for the normal man to feel that his day's work is all important to the war effort. The fact that the men do not like the six-day week is also an important factor in lay-offs. Many of them, mainly the older men, cannot physically stand six full days work each week; and since the average age of our men has risen from about 35 to 42 due to the drafting of the younger men we have more men in this category than ever before.

The fact that the miner is making so much money today that he can afford to lay-off is also very evident. A recent study conducted on a group of coal loaders disclosed that these men on the same tonnage rate made 57.1 percent more money for the period March through December in 1943 after the start of the 6-day week than in the same period in 1942 on the 5-day week basis. The hourly rate man is even better off under the Lewis-Ickes contract, showing an increase of 63 percent in take-home pay on a full time basis as compared to the old 5-day workweek, no-overtime basis.

A limited recent attempt to analyze absenteeism resulted as follows: No reason, 33.5 percent; sickness (questionable), 41.9 percent; drunk, 2.6 percent; slept too late, 9 percent; induction examinations, 4.2 percent; personal business, 3.6 percent; injured, 5.9 percent; visiting, 2.3 percent; son home from Army, 2 percent; resting, 9 percent; miscellaneous, 3.7 percent. It is fairly reasonable to assume that a large part of the "no reason" and "sickness" groups, "just did not choose to work."

Whatever the reasons behind the absentee problem, it is serious and does not appear due for any substantial improvement in future months. It is hard to say what could have been done to prevent its reaching its present proportions, but it would appear that, as was the case in the draft situation, if the bureaucrats had recognized the problem from the beginning and had had the courage to step on some people's toes for the good of all, a much better situation would have resulted.

Fortunately, the picture is not all bad and despite the serious labor shortage a near record production from the Pocahontas field should be



The bulletin board of Peerless Coal and Coke Company represents a sincere effort to call attention to the serious effects of absenteeism. One difficulty: convincing people that coal IS ammunition

achieved barring unseen adverse developments. The highest tonnage ever produced in this field was mined in 1942 when 33,883,554 tons were shipped, making a weekly average of 651,607 tons. In 1943 despite strikes and a 10 percent smaller labor supply 32,572,252 tons were mined, making a weekly average of 625,236 tons and giving us our second best production year. Production this year through May 13, as previously pointed out, is 12,060,719 tons or 541,445 tons less than for the same period last year. This tonnage was produced with more than 10 percent less men than were available in 1943. The weekly average this year is 634,774 tons compared to 625,236 tons for 1943. In the face of these weekly averages it would appear that there is a possibility of producing 33,008,248 tons in 1944, which would be only 800,000 tons less than the record year 1942, and 500,000 tons more than actually produced in 1943, despite an active labor force only about 60 percent as large as that employed in 1942.

However, some of our men are still being drafted and not enough replacements are available to compensate for those leaving their jobs for various reasons. Further, the absenteeism rate is not improving and may become worse—which makes it appear that a weekly average of 600,000 tons is the very best we can hope to obtain. This would mean a production in 1944 of nearly 1,500,000 tons less than that produced in 1943, but it would still be our fourth highest tonnage year.

To attain this tonnage it will be necessary to have steady work, no strikes, no more draft loss and no higher absenteeism rate than at present. All of these are factors over which our bosses in Washington, and not we ourselves, have control. It is, therefore, squarely up to them to recognize the situation and meet it directly, not jump over it and run around it as has been the case too often in the past.

The transportation situation is the one really bright spot in the picture. The railroads have done and are doing a splendid job of carrying the coal. We have not been hampered by car shortages at the mines and are not likely to have any trouble with this for the balance of the year. The cooperation of the retail dealers in speeding up the unloading of cars has been one of the big factors making this good car supply possible, and I know that we can count on continued cooperation. We, of course, cannot always obtain the type equipment the dealers may specify but this is about the only problem the railroads have not yet solved.

Of course, Pocahontas coal, being a most important by-product coal, is essential for making the steel so badly needed in our war production program. Therefore, the Solid Fuels Administration has had to divert by directives, a substantial amount of our product from our regular retail and industrial customers. This is a situation, like so many others today, over which we have no control. It is a necessary evil in these times but if handled correctly should not work undue hardship on the retailer. Despite this dislocation of some of our tonnage due to the directives, we in the Pocahontas field have rigidly adhered to a policy of allocating the balance on the same basis as before the war years. In other words we are taking care of our old customers first. If the retailers will follow the same course, the present tight situation would be measurably improved!

The 75 percent delivery limitation on high quality southern coals is unfortunate in that it encourages the mixing of lower quality fuels with premium grades, which can only breed trouble and customer dissatisfaction in the long run.

Realistic Planning Needed

If as much effort were expended by the Solid Fuels Administration in trying to combat the present causes of the lag in production as it has in publicizing the shortage of coal, it would appear that less harm and infinitely more constructive results would be obtained. This continual crying of "Wolf, Wolf," is sure to create panic and give the coal industry a "black eye" unnecessarily. Given a fair chance, we should be able to meet the demands made upon us and by proper conservation and intelligent planning, every person and industry entitled to its use should have Pocahontas coal.

We have a big job to do and we realize the seriousness of the task ahead of us. However, we need help if we are to actually reach our production goals and we need it badly. In the main this help can only come from our bosses in Washington.

Washington must see to it that:

1. Strikes and labor slow downs are not permitted.
2. Further increases in wages are not allowed.
3. The mines are returned to their rightful owners.
4. The draft does not take any more of our men.
5. Experienced miners over the most useful military age are returned home for work in the mines.
6. Some cure for absenteeism is worked out in the form of a "work or fight" policy or by some other effective method.
7. Less talk of coal shortages and more action to prevent them should be worked out on the consuming, distribution and producing ends of the business.

If given a fair chance, the Pocahontas field should equal its tonnage of 1943 and may even better this figure. However, there are many real obstacles before us which make it difficult to reach these quotas. Nonetheless, there should be enough Pocahontas coal to go around and to prevent undue hardships unless the directive situation becomes steadily worse.

The retailer has a hard road ahead. He has before him a tremendous job in trying to serve his customers adequately in this difficult time of coal shortages and abundance of governmental restrictions. However, this is a challenge to his ingenuity and resourcefulness in trying to make the customer understand the situation as it really is, supplying him with the proper coal for his needs and refraining from resorting to substitutes unless forced to do so. It is only in this way that he can build his business so that in the post-war era he will be in a position to cash in on the ground work now laid as a protection against the inroads of competing fuels.

We in the Pocahontas field are giving our best efforts to producing our product for the war and for other needs. We sincerely believe we can do the job well enough to prevent drastic Pocahontas coal shortages despite adverse conditions. However, we must count on the retailer to take care of the consumer so that he will understand the fuel situation and feel that he is being treated as fairly as possible under difficult conditions.

The result of this type of good business practice will be to assure coal dealers and our industry of a good reputation and a satisfied public who will be our market for quality coals not only today, when it may have no alternative, but in the post-war era when it is free to burn the fuel of its choice.



Corrosion Inhibiting Characteristics Of Rock Drill Oils

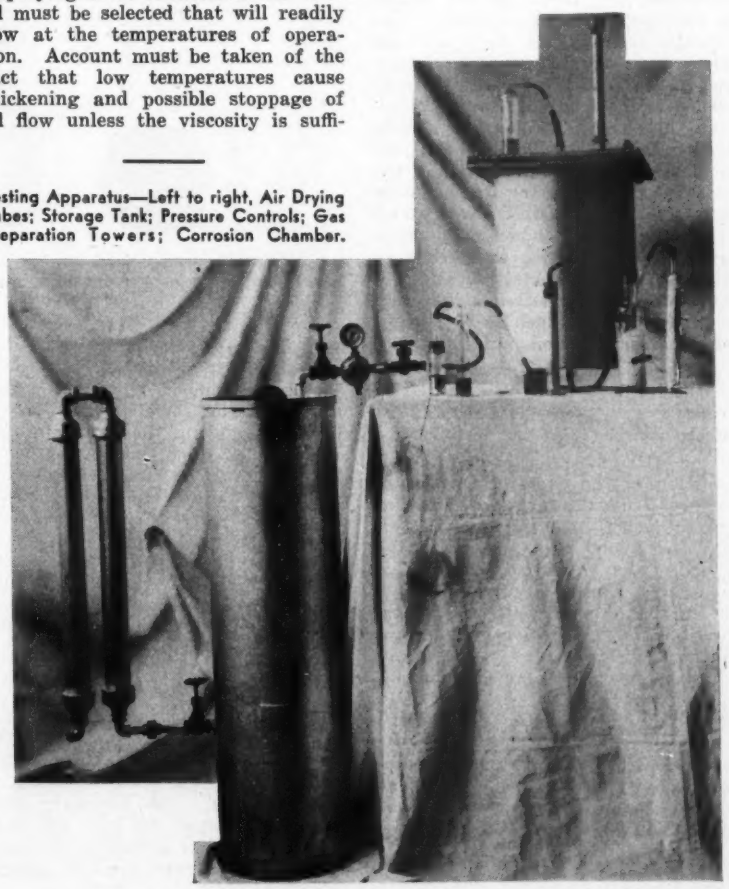
Extensive experimental work compares various oils and indicates those that are best for rock drill lubrication

By FLOYD R. ANDERSON
Chief Metallurgist
Gardner-Denver Co.

DEVELOPMENT of oils to be used in the lubrication of rock drills has been the subject of a great amount of cooperative work on the part of oil companies and rock drill manufacturers. It is obvious that the testing and developing facilities of a rock drill company cannot be directed to the compounding of oils due to the highly specialized and complex nature of the combinations used in modern lubricants. For this reason, the role the rock drill manufacturer plays in the development of oils is simply one of observing the type of failures experienced in rock drill parts, noting those which may be influenced by the lubricant and pointing out the needs to the oil producers. After the best combination of properties have been developed in an oil, the next cooperative effort is that of recommending to the rock drill operator the surest means of employing the oil to its fullest advantage so that a maximum service may be obtained from rock drill parts.

It has been well established in recent years that proper viscosity selection, the use of high film strength and the use of emulsifying types of oil are factors which play important parts in establishing the best type of oil to be used. The viscosity determines whether the oil reaches the working parts of the machine. Thus, the use of extremely heavy oils or so-called "liquid greases" has been discouraged. Instead, oils are recommended which flow readily at the temperatures of operation. High film strength, obtained by the use of extreme pressure additives, is necessary, particularly where high rotational loads are encountered. If low film strength oils are used, scoring and ultimate breakage of certain rock drill parts will occur. Most of the oils offered to the rock drill trade today embody high film strength characteristics and the results definitely point to a decrease in the scoring type of failure. Emulsifying ability ensures continued lubrication in the presence of water. While this ability can be developed to the degree that a very stable combination of oil and water is obtainable, it is doubtful that extreme emulsibility is desirable due to the tendency for a foam to form in the line oiler or integral oiler chamber. It is well agreed among oil producers and rock drill manufacurers that these properties are important.*

The other important phase of efficient lubrication is the operator's responsibility in properly using oils displaying these characteristics. The oil must be selected that will readily flow at the temperatures of operation. Account must be taken of the fact that low temperatures cause thickening and possible stoppage of oil flow unless the viscosity is sufficiently low. The line oiler or integral oiler chambers must be properly filled at all times, for a momentary absence of oil on the working parts will permit scoring and cracking which leads to eventual breakage. The continuous and proper feeding of oil



Testing Apparatus—Left to right, Air Drying Tubes; Storage Tank; Pressure Controls; Gas Preparation Towers; Corrosion Chamber.

* "Rock Drill Lubricants," *Engineering and Mining Journal*, September, 1942.

to the machine is indicated by a small but definite accumulation of oil on each drill steel shank removed from the machine.†

Corrosion of rock drill parts is a subject worthy of special consideration in view of the many instances of failure traceable solely to its insidious effect. It is insidious because of the seeming lack of connection between "cause and effect." Much is made of the "wear" of rock drill parts, the assumption being that such "wear" is due to the mechanical removal of metal surfaces by abrasive action. Observation and testing over a period of many years forces the conclusion that in the majority of cases, so-called "wear" is actually the removal of metal surfaces by chemical attack or corrosion rather than by mechanical abrasive action. In some cases the evidence of corrosion is readily apparent in the pitted condition of the surface or the accumulation of rust. In most cases it is not so readily apparent because of the removal of corrosion products by the re-polishing of working surfaces due to movement between companion parts. In either case, metal loss is more frequently than not ascribed to "wear."

Many fatigue failures of rock drill parts are the result of the simultaneous occurence of corrosion and repeated stress. Rock drill parts are made from specially selected steels and heat treated by carefully controlled methods to develop the maximum in physical properties. These properties are predictable and dependable so that the imposition of the repeated stresses of service should be satisfactorily withstood without breakage. Tests conducted by many reputable laboratories establish conclusively that the effective strength of steels under repeated stress may be lowered by as much as 90 percent when corrosion accompanies stress.

Corrosion, therefore, exerts two detrimental effects on rock drill parts: It accelerates "wear" and reduces the effective strength of the material.

One of the functions of a rock drill lubricant is the protection of metal surfaces from the corrosive attack of the actuating air and impurities it may carry, and more important, the attack of the water and impurities it may carry. It has been generally assumed that any oil will tend to reduce or inhibit corrosion to a certain extent. Within recent years, chemists have developed compounds or additives which retard or completely prevent corrosive attack of metals. As stated before, it is not within the province of the rock drill manufacturer to compound lubricants but it was desired to ascertain the protection that rock drill lubricants afforded the working parts with which they were used. Corrosion tests were made to test the inhibiting properties of various rock drill oils, the tests and results being briefly described and listed.

Essentially the tests consisted of subjecting test strips of steel to the corrosive attack of a controlled corrosive atmosphere for a definite period of time. Loss by corrosive attack was measured by the loss in weight due to corrosion. Dry and wet, unprotected strips provided the basis for rate of attack of steel not protected by oil. Strips which had been dipped in straight oil and strips which had been dipped in an emulsion of 1 part of oil to 1 part of water were subjected to the same corroding conditions and their loss similarly determined. Twenty-five rock drill oils representing the product of 14 different oil companies were thus tested. The tests were made in duplicate and good agreement between such duplicate sets was observed throughout. Details of testing follow:

Test Strips

Strips of SAE 1020 steel 1/16" x 1¼" x 3" were shot blasted, wiped and dried to provide chemically clean surfaces. These were weighed to the nearest .0001 gram before testing. They were suspended by glass hooks in the corrosion chamber after having first been dipped in the oil or oil-water emulsion being checked. After being subjected to 24 hours of corrosive attack, they were removed, washed, dipped in 50 percent citric acid to remove the products of corrosion, rinsed in water and dried. Subsequent weighing permitted calculation of loss due to corrosion which is expressed in terms of milligrams loss per square inch of specimen area.

Corrosion Chamber

The chamber consisted of a chromium plated steel cylinder 12" in diameter by 18" high with a cover which could be bolted in place to obtain a gas tight seal. The necessary pipe connections, gages, dry and wet bulb thermometers, gas deflectors and specimen supports were used to permit control and recording of the gas conditions within the chamber.

Corrosion Atmosphere

In preparing a representative corrosive gas medium, several service conditions were considered. Corrosion of rock drill parts in practically all cases involves the presence of water. It also involves the presence of air which provides the oxidizing influence. Some of the worst cases of rock drill parts corrosion occur in mines containing sulphide ores where sulphur dioxide or sulphurous acid is present in varying amounts. It was felt that if these three gaseous media could be included together in a measured and controlled way, results representative of those experienced in many mines would be obtained.

A measured amount of dry sulphur dioxide was introduced into a storage tank of known capacity. Dried, compressed air at 90 pounds per square inch was then introduced into the tank to obtain the SO_2-air mixture as desired. This mixture was then passed through a column of water to saturate it with water vapor before introducing it into the corrosion chamber. The water vapor maintained at 85 to 90 percent saturated gas at all times during testing. Temperature within the chamber was 75 to 80 degrees F. during testing.



Inadequate protection against corrosive elements in mine water and atmosphere ruins important parts of the rock-drill

Three sulphur dioxide-air mixtures were used: 50 parts SO_2 to 1,000,000 parts air; 500 parts SO_2 to 1,000,000 parts air; and 5,000 parts SO_2 to 1,000,000 parts air.

Duplicate sets of samples on each oil and each oil-water emulsion were tested under each of the three sets of corroding conditions.

The average loss in weight of each set of specimens is given in Tabulation I.

As a matter of further information, other properties of the oils used in these tests are presented in Tabulation II.

Conclusions to be drawn from cor-

† "Rock Drill Lubrication," *Rock Products*, June-July, 1943.

rosion testing of 25 different rock drill oils are as follows:

(1) Losses with 50 p.p.m. SO_2 were less than those with 500 p.p.m. SO_2 and those with 500 p.p.m. SO_2 were much less than those with 5,000 p.p.m. SO_2. This appeared reasonable in that stronger concentrations of SO_2 (sulphurous acid) should increase the rate of chemical reaction between the atmosphere and the strips.

(2) Losses displayed by the strips "protected" by the straight oils were less in general than those "protected" by the 1 to 1 oil-water emulsions. The exceptions, numbering 15 out of the total of 70 tests, were minor in amount, the actual differences being within the amount of experimental error to be expected from such tests.

(3) Losses displayed by the dry, unprotected strips were in all cases less by 50 to 67 percent than the losses by the wet, unprotected strips. Wetting of the "wet" unprotected strips was done by simply dipping the strips in distilled water prior to placing them in the corrosion chamber. This was also in line with expectations since the presence of water will accelerate such reaction. In fact, if water were entirely absent, no appreciable reaction would have occurred in any of the tests.

(4) Losses of some of the "protected" strips were equal to or greater than losses of the unprotected strips. This was one of the most unexpected points developed in these tests. In other words, some oils afford no protection against corrosion whatsoever. In fact, some of the results indicate that some oils act to accelerate corrosion.

(5) Two oils, No. 6 and 19 were outstanding in the protection they afforded, particularly under the most severe conditions (5,000 p.p.m. SO_2). The protection they afforded was as good with the oil-water emulsion as it was with the straight oil.

(6) With 5,000 p.p.m. SO_2, all of the straight oils, except No. 6 and No. 19, permitted corrosion losses approximately equal to or greater than the loss displayed by the dry, unprotected strips.

(7) Of oils No. 6 and 19, only the latter displayed characteristics such as viscosity, film strength and emulsible properties which are considered good for rock drill lubrication. In other words, oil No. 19 is the only one of the 25 oils tested which appears to display acceptable properties in all respects. At least this oil stands forth as a promise that it is possible to obtain a combination of properties in a single oil which will (a) lubricate under wet conditions of operation (emulsibility), (b) protect parts against heavy sliding pressures (high film strength), (c) avoid formation of foam in the line oiler chamber (short lived emulsion), and (d) afford protection of parts against corrosive attack, at least under conditions as used in the foregoing tests.

Corrosion tests made on steel strips under conditions designed to simulate a severe but typical set of conditions in service indicated that most rock drill oils afford little or no protection of steel against corrosion. One oil was tested which gave good protection against corrosion but displayed undesirable properties in other respects. Another oil displayed good corrosion inhibiting properties and in addition exhibited good viscosity characteristics, high film strength and restricted emulsibility. This latter oil affords proof that rock drill oils can be compounded to display all of the desirable characteristics needed to protect drill parts against commonly encountered types of corrosive attack at the same time affording protection against premature "wear" and breakage. It is not within the scope of this article to even attempt to specify the compounding of such an oil but instead to demonstrate the need and possibility of filling that need to the benefit of the mining trade. It seems safe to predict that oil companies will have much to offer in the way of corrosion inhibiting rock drill oils.

It is desired here to acknowledge the assistance of R. S. Kelher and G. V. VonVihl, of the Gardner-Denver Laboratory, in conducting the many tests used in the preparation of this article.

TABULATION I

Specimens Treated with Oil No.	Loss in weight in milligrams per sq. in. 50 p.p.m. SO_2 Straight Oil	50 p.p.m. SO_2 Emulsion 1 Oil 1 Water	500 p.p.m. SO_2 Straight Oil	500 p.p.m. SO_2 Emulsion 1 Oil 1 Water	5,000 p.p.m. SO_2 Straight Oil	5,000 p.p.m. SO_2 Emulsion 1 Oil 1 Water
1	*	..	..	..	..	..
2	1.6	1.6	0.5	1.3	6.6	6.3
3	0.0	0.1	0.7	0.7	6.5	5.9
4	0.4	0.4	0.8	0.8	9.3	10.3
5	0.2	0.4	0.8	1.0	8.3	10.1
6	1.0	0.9	1.2	1.7	1.5	1.7
7	0.7	2.9	1.2	0.7	5.3	13.5
8	0.8	1.0	1.5	1.1	6.5	12.5
9	0.5	0.9	1.5	1.2	6.2	6.2
10	..	..	0.7	0.6	5.5	14.7
11	0.6	0.9	0.7	1.2	5.8	7.4
12	1.1	1.6	0.5	0.3	6.2	6.8
13	1.1	1.8	1.5	3.8	13.1	14.3
14	0.8	3.5	1.5	3.0	13.0	12.2
15	0.8	1.5	1.4	2.0	11.5	12.6
16	0.9	7.1	0.9	5.4	9.4	11.7
17	0.2	0.5	1.2	1.1	7.8	9.5
18	0.1	0.6	0.5	0.3	6.6	6.6
19	0.0	0.0	0.4	0.3	1.7	1.9
20	0.8	1.5	0.5	1.5	11.4	11.8
21	0.2	0.2	0.1	0.8	8.7	8.8
22	..	..	0.6	0.4	9.7	10.4
23	1.0	3.0	0.4	1.5	10.5	11.1
24	0.0	0.3	1.2	1.1	10.9	10.5
25	0.9	0.9	..	..	..	..
Dry sample—untreated	1.2		1.5		6.5	
Wet sample—dipped in water	2.4		4.6		17.5	

* Insufficient oil available for these particular tests.

TABULATION II

Oil No.	Viscosity Tests Saybolt Sec. 100° F	130° F	210° F	SAE	V.I.	Film Str. p.s.i.	Steam Emulsion Seconds
1	429	183	56	20	78	3,400	1,200+
2	193	102	47	10	111	17,850+	1,200+
3	503	219	62	30	89	17,850+	1,200+
4	694	272	63	40	63	17,850+	390
5	611	259	62	40	62	17,850+	420
6	...	130	..	Liquid Grease		1,700	1,200+
7	505	228	61	30	84	4,250	1,200+
8	705	320	71	40	86	3,400	1,200+
9	...	197	..	30	Liquid Grease	2,550	1,200+
10	521	239	66	30	109	3,400	1,200+
11	608	280	66	40	85	2,550	420
12	435	196	58	30	86	2,550	270
13	222	95	45	10	48	17,850+	....
14	300	125	48	20	40	17,850+	....
15	517	198	55	30	31	17,850+	....
16	826	298	66	40	39	17,850+	....
17	564	252	66	30	96	17,850+	1,200+
18	558	243	68	30	102	17,850+	360
19	793	331	74	40	81	17,850+	300
20	372	167	54	20	83	17,850+	240
21	575	224	60	30	58	17,850+	1,200+
22	...	...	..	..	...	...	1,200+
23	304	150	53	20	100	2,500	150
24	436	198	59	30	89	5,100	1,200+
25	540	240	72	30	116	4,250	1,200+

A Machine For Setting Mine Timbers

Designed and Operated by the Gay Mining Company of West Virginia to speed up and reduce labor in placing cross bars

By G. B. SOUTHWARD
Mechanization Engineer
American Mining Congress

MODERN coal mining is entering a new stage of development—the application of power to auxiliary operations. A few years ago when mechanical loading reached the point of proven economical performance, many of us thought that complete coal mine mechanization was an accomplished fact but it has turned out that this view was premature. While it was true that mechanization had been successfully applied to the major operations of cutting, drilling, loading and haulage, we were overlooking the fact that many other things had to be done underground, which all together add up to a considerable portion of the mining cycle. Actually, the efficiencies and economies made in the major operations had the effect of throwing the auxiliary operations out of line.

This situation has been recognized and although the war has necessarily slowed up the manufacturing of new devices, it is still possible for individual companies to put some of their own ideas into effect. One of the outstanding developments in this category is a mine timbering machine designed by Harry S. Gay, vice president of the Gay Mining Company, operating in the Williamson field of West Virginia. This is a remarkably clever device; it raises a cross bar in place against the roof while the posts are being set and also saws the posts to the required length.

Description of the Machine

The body of the machine is a 1½-ton Ford chasis 26½ ft. long by 7 ft. 2 in. wide, powered through a cable reel, self-propelled and mounted on rubber tires. It is controlled by a steering arrangement similar to that on a shuttle car and is very flexible in movement, traveling anywhere that a shuttle car or a tractor loader will go.

Mounted on a hinged bearing in the center of the bed is a steel cantilever arm that extends back over the rear half of the platform and is raised or lowered hydraulically. (See Fig. 1) The end of this arm has a saddle on which the cross bar is placed and by means of the lift, the arm is elevated to bring the cross bar up against the mine roof. As the saddle raises it remains level but is swivelled so that the timber can be rotated to its desired position and the hydraulic jack has sufficient power to hold the bar against loose top until the posts are in place.

The machine has a crew of three men who perform all the timbering operations including the transporting of their supplies. The bed of the truck will carry 12 cross bars and 24 posts, including caps, wedges and tools —cross bars are usually 5 in. by 7 in. by 12 ft., and the posts 6 in. to 7 in. round.

Method of Operation

In entering a place to be timbered, the truck backs into position so that the saddle of the lifting arm is under the top where the timber is to be set. Two men then slide a cross bar from the platform onto the saddle steadying it as the hydraulic lift raises the bar against the roof, where it is held in place while the posts are cut and set. At the rear side of the machine there is a 22-in. motor-driven circular saw which is normally retracted under the deck (See Fig. 2), a post is laid on the step at the rear end of the truck body, the saw is put in operation and pulled out by a hand lever, cutting the post to its measured length. (See Fig. 3)

The entire operation is very simple and quick; lifting a header and sawing a post are each performed in a matter of seconds but the total time consumed in placing a complete three-piece set, of course, depends on conditions. Two cross bars are used after each machine cut which is about 7 ft. deep and one timbering machine crew of three men have no difficulty in keeping up with the mechanical loader that is producing an average of 1,500 tons in 2½ shifts per day in narrow work. Individual high records for a single set are apt to be misleading but as many as 25 places, with two sets per place, have been timbered in a seven-hour shift, and as a sustained record over a year's time, the machine crew is doing the work which would require from five to six men with hand methods.

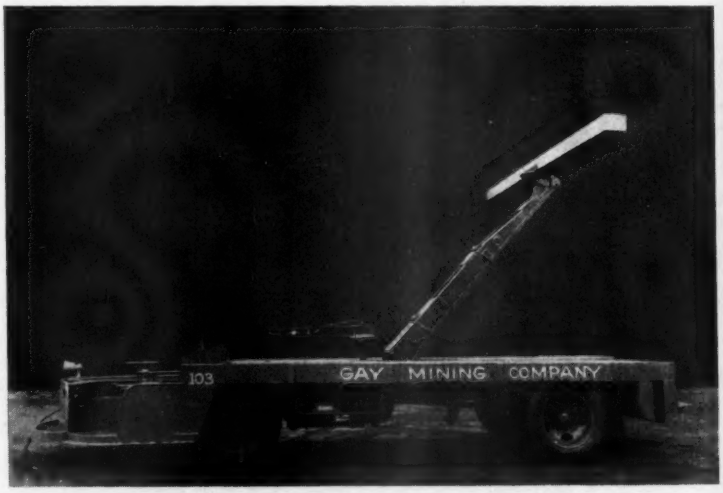


Fig. 1. Arm in elevated position to raise cross bar to mine roof

Development of the Present Model

The present machine is the third of its type; the first model was originated and designed by Harry S. Gay over two years ago in collaboration with Perry Morrow of the Joy Manufacturing Company and was put in service on May 4, 1942. Its operation proved the practicability of the idea and the present model, incorporating improvements recommended by F. E. Vincent, mine superintendent, and others of the operating staff of the Gay Mining Company was designed and built in the early part of 1943 by Thomas Maynard of the Maynard Machine & Electric Company, Williamson, W. Va. It has been in continuous use for the past 15 months and credit should be given to all of these men who have taken part in this successful development.

It is simple in design and construction. The chasis is a 1½-ton 1940 Ford truck body; the platform is 16 ft. long by 7 ft. 2 in. wide and the total overall length including the driver's cab is 22 ft. 6 in. Tires are 7.00 by 20, 10-ply and the rear axle has dual wheels. The tramming motor is 15 h.p., hydraulic lift motor is 3 h.p. and the saw motor 5 h.p.; all 275 V.D.C. through a cable and reel.

Mine Operation

The machine is used as a regular part of a mechanical loading unit in the Timbar No. 1 mine of the Gay Mining Company, located in Mingo County, West Virginia, and operating the Coalburg Seam. This has height of from 6 to 9 ft. of clean coal, with a slate top that has to be supported on cross bars, sometimes placed as closely as 3 ft. The mine at present is developing entries, driven from 12 to 14 ft. wide with a Joy mechanical loader and 5-ton shuttle cars and all machines in the working sections, including the drill and cutter, are either tractor or rubber tire mounted. Track is used for main line haulage with 7½-ton steel drop-bottom cars. The average production of the mine is about 1,500 tons per day, working 2½ shifts.

Conclusion

Coal mining is a laborious job and as time goes on the labor is increasing rather than diminishing. Modern coal preparation has introduced new operations—shearing and multiple cutting at the face with crushing, washing, blending and dedusting at the surface plant. Electric wiring, substations, track construction, ventilation, and machine maintenance have all advanced from comparatively simple rule-of-thumb practices to carefully planned methods with equipment especially designed for its particular service. The progress made along these lines has been gratifying but there still remains much to be done. Coal's competitors—oil and gas—have no mining costs and in order for coal to overcome this handicap and maintain its rightful share of future markets there must be an increased application of power underground—mechanical, electrical and especially "brain power." Mr. Gay and his staff, long recognized as advocates of modern mining, have made a real contribution to the coal industry through their successful development of a machine for mine timbering.

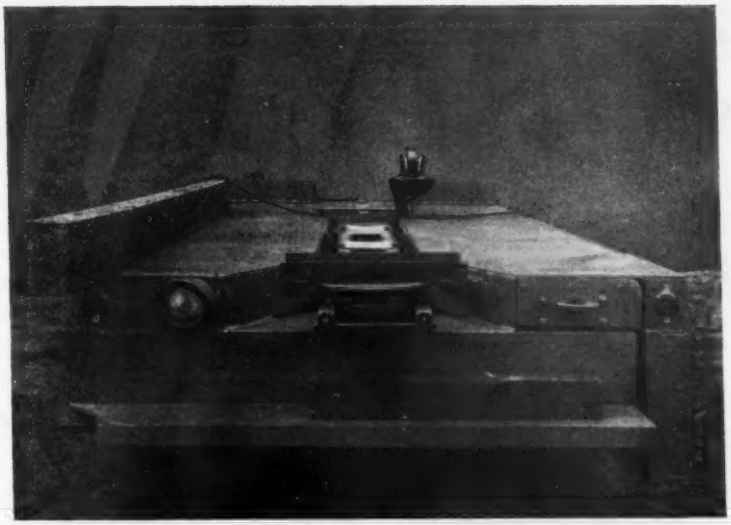


Fig. 2. End view showing saddle and platform for timber transportation



Fig. 3. Illustrating the operation of the circular saw

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By W. F. NETZEBAND
Mine Superintendent
American Zinc, Lead & Smelting Company

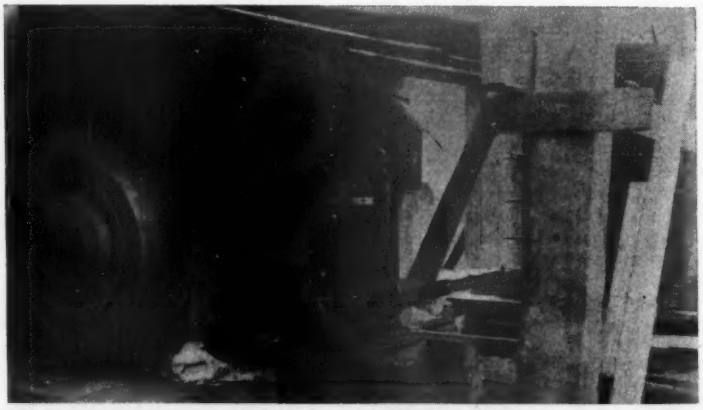
THE Smith shaft was located approximately 1,000 ft. west of Henckel No. 1 shaft. From churn drilling it was thought that the shaft would be on the western edge of the ore body. This was later proved to be erroneous, for some of the richer ore was mined west of the shaft in an area where the drill holes showed light mineralization. The shaft was sunk to 14 ft. with hand windlass and work was then suspended until the sinking derrick was completed and the compressors placed in operation, for the clay and boulders changed to heavy chert seams (8 to 12 in. thick) interlayered with thin clay seams which had to be drilled before blasting. Work was resumed on October 30, 1942, and progress was satisfactory until at 32 ft. the inflow of water became so heavy that it could not be bailed out by hand. It had been expected that this surface water would drain to the Pomona pump at Henckel No. 1 shaft so the shaft was not sealed at the contact of the clay and solid rock. If this water had drained as expected, the shaft could have been sunk practically dry to 135 ft. where the first flow of water had been noted in churn drilling. This lower water came in through the porous cherts of "N" bed. As it was, the water draining in along the contact of the clay and the solid rock poured into the shaft and made working conditions very unsatisfactory, besides presenting quite a problem in keeping the shaft unwatered.

When the inflow of water became too heavy to be bailed by hand, a sump pump was installed which took care of the water to a depth of 70 ft. Below this depth a single pump was not effective, so two pumps were hooked together, the discharge of the lower pump being connected into the suction of the upper. This worked fairly satisfactorily, but it was difficult to keep both pumps working efficiently. The best solution of the problem was the use of two pumps in tandem with a ⅜-in. air lift in the discharge of the upper pump.

No provision had been made for installing a deep well pump at the Smith shaft for it was thought that the Henckel No. 1 pump would drain the water from this area. When it became apparent that the surface water would not drain to the Henckel No. 1 pump, a churn drill was moved in as close as possible to the north side of the shaft and a 10 in. churn drill hole was put down to 225 ft. A 6-in. Pomona pump with 25 hp. Unidrive motor was installed in this pump hole. The capacity of this pump, set at 210 ft., was 350 g.p.m. By the time the drill hole was completed and the pump installed the shaft had been sunk to 135 ft., which was just about the limit to which the sump pumps would lift the water even with the aid of the air lift. The only alternative left was to cut a short drift towards the pump hole and drill a drain hole to discharge the water from the sump pump. Because the sump pumps had reached their limit, it was difficult to keep the shaft unwatered during this operation and it took several days to complete the job. As an anticlimax to the water troubles, the churn drill hole had drifted several feet towards the shaft and the last round shot in the drift broke through into the pump hole and partially flattened one section of pump column. This required pulling the Pomona pump and replacing the damaged section. This should have ended all water troubles for awhile, but a week later, in sub-zero weather, the hoistman allowed the priming line to freeze, and because of the extreme cold he started the pump and then went into the change house without waiting to see if the pump had picked up the water. The pump failed to pick up the water and all the rubber bearings were seriously burned before the hoistman became aware that the pump was not throwing any water. The pump had to be pulled again and new bearings installed. The pump has not had to be pulled since that time.

Levels Developed

At a depth of 151 ft. a drift was started to the east. As this drift was advanced the shaft was continued until it was bottomed at 169 ft. on February 1, 1943. A lower drift was driven east at 168 ft. This drift was driven 19 ft. and then a raise cut to connect with the upper drift. This raise was equipped with a hopper on



Pomona pump and blower at Henckel No. 1 shaft during sinking operations. Blower later placed over churn drill hole

*Part I was printed in the June issue of MINING CONGRESS JOURNAL.

the lower level and all upper level ore was transferred to this hopper and hoisted from the lower level.

The ore encountered on the upper level was very disappointing, so two 5 x 7 drifts were started towards churn drill holes 6 and 14 respectively. The drift being driven in a southeasterly direction toward drill hole 6 indicated that the ore was dipping rather sharply below the mining level, so it was abandoned for the time being and work concentrated on the drift toward drill hole 14.

The original plan had been to use a three-drum scraper hoist and drag all ore into the hopper and hoist from the lower level. As the development work progressed it soon became apparent that this plan was not feasible, so the hopper was filled and tracks and cans installed on the upper level. The shaft was boarded over and all hoisting done from the upper level.

The drift toward drill hole 14 showed some ore, but not sufficient for mining, so another drift was driven northwest towards drill hole 7. These two drifts eventually developed enough ore to warrant mining operations and on May 1, 1943, ore was sent to the Federal Mining and Smelting Company mill at Duenweg for treatment.

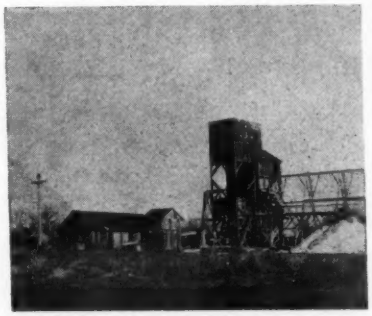
Mining

Henckel No. 1 Shaft—The original plan was to use a scraper hoist on the upper level (154 ft.) and drag the ore into a transfer hopper and load into cans on the lower level for hoisting to the surface. The lower level (169 ft.) was to be hand shoveled directly into cans and all ore hoisted from the lower level. This plan of operation has worked very satisfactorily, with minor changes, up to the present time. An Ingersoll-Rand 25-h.p., three-drum scraper hoist with 48-in. Holcomb type scraper hoe has been used. Three-eighths-inch plow steel, hemp center cable has been used on the pull-back, and one-half-inch cable on the pull-in. The pull-back cables handle 2,500 to 3,000 tons before replacement, and the pull-in cables about 2,000 tons. The effective range of the scraping operation has been about 300 ft., which is the maximum length of useful cable which can be handled on the pull-in drum. Cross pulls have been necessary at times to prevent excessive cable wear caused by dragging against pillars.

At first all drilling and hand shoveling was done on the day shift and all scraper loading on the evening shift. The mine has now been opened up so that all operations are confined to the day shift.

The height of the drifts has varied from 10 ft. to 25 ft., but the average drifts are 12 to 18 ft. high. The drift width varies widely depending on the condition of the back. Much of the ore body is overlain by a massive limestone which has leached to a loosely cemented, coarse textured rock with numerous inverted pot holes filled with highly ferruginous clays or tallow clay with included zinc carbonate masses. A zone, three to five ft. in thickness of either ferruginous clay or a fractured, iron-stained chert overlies the ore horizon. In either case this zone must be taken with the mined ore for it will not stay in place after the ore has been removed. This zone of clay is thicker and more persistent along the zones of sheering or fracturing. The two main shear zones shown in Fig. 1 are manifested in the underground workings by the dropping of a limestone block into the ore body. The back requires careful trimming to prevent serious rock falls, but once it has been trimmed no further trouble has been experienced.

All drilling is done with five Ingersoll-Rand DA35 drifters and one Ingersoll-Rand N75 drifter, taking 1¼-in. hollow, round drill steel with forged cross bits. All steel changes are two ft., starting with 3-ft. jumpers to 11-ft. lengths. The rock is not hard to drill and the machines consistently drill 60 to 120 ft. per 8-hr. shift; average for a 7-month period was 81.66 per shift. All blasting is by fuse and No. 6 detonator, using



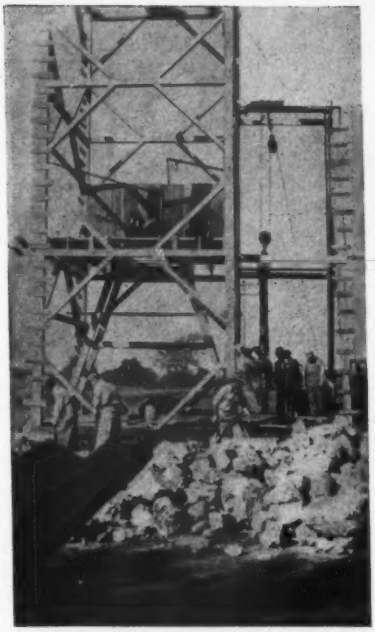
Nearly completed derrick and hopper at Henckel No. 1. Sinking hoist platform will be removed when shaft sinking operations are complete

35 percent semi-gelatin powder in 1¼ x 8-in. sticks.

Smith Shaft

As stated earlier, the original plan to load the ore at this shaft with a scraper hoist and transfer hopper was abandoned early in the development period and all loading has been by hand directly into 1,650-lb. cans mounted on cars. Track gauge is 18 in. So far all tramming is by hand, but the distance from the shaft is rapidly increasing to the point where a mule must soon be installed to gather cans and bring them to the shaft.

The mining method at this shaft is the typical open stope with supporting pillars spaced approximately 40 ft. apart. This ground mines very rapidly



Sinking derrick, Henckel No. 1. Rock in foreground is for hopper foundation

for the drift headings are only 6 ft. high on the average, with a few headings 8 ft. high. This is a low-grade, and (because of the low face) a high cost mine and could only be operated under a government-sponsored premium plan.

This mine uses three Ingersoll-Rand DA35 drifters, one Ingersoll-Rand N75 drifter and one Sullivan T-350 drifter. All drilling is from posts, using 9 and 11-ft. holes. A typical day's drilling ranges from 9 to 14 eleven-ft. holes, with an average of 99.39 ft. per shift over a six-month period. All blasting is by fuse and No. 6 detonator using 35 percent semi-gelatin powder in 1¼ x 8-in. sticks. Shoveling is on a piece-work basis, but each contract shoveler is furnished with a "bruno hand" who assists the shoveler in tramming the cans to the shaft lay-by, from where they are pushed into the shaft by a "bumper."

TABLE I

AVERAGE MINING COSTS—HENCKEL MINE

Operation	Percentage of Total Mining Cost
Pumping	3.17
Breaking ground	40.74
Roof protection	1.43
Loading	18.36
Haulage	9.89
Hoisting	13.11
Culling and breaking boulders	2.78
Sundries	7.00
Development	3.52
Total mining cost	100.00

TABLE II

AVERAGE MINING COSTS—SMITH MINE

Operation	Percentage of Total Mining Cost
Pumping	1.66
Breaking ground	46.20
Roof protection	1.43
Loading	20.10
Haulage	12.64
Hoisting	7.84
Culling and breaking boulders	2.38
Sundries	5.29
Development	1.65
Total mining cost	100.00

Costs

All costs are necessarily high compared to normal, but the costs at this mine compare favorably with the district averages. Costs shown in the following tables have been put on a percentage basis rather than in dollars and cents so that they may be compared with costs in normal years.

Another breakdown of the mining costs showing the relation of labor to supplies, explosives, etc., is shown in the following tables:

TABLE III

AVERAGE MINING COSTS—HENCKEL MINE

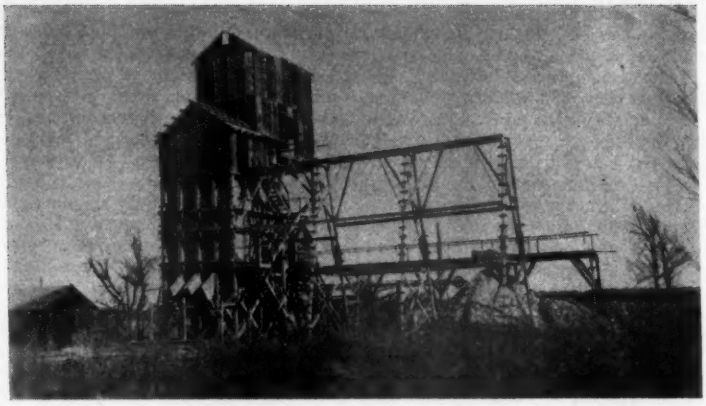
	Percentage of Total Mining Cost
Labor	69.02
Liability insurance	5.40
Explosives	10.03
Supplies and repairs	11.85
Development	3.70
Total mining cost	100.00

TABE IV

AVERAGE MINING COSTS—SMITH MINE

	Percentage of Total Mining Cost
Labor	73.64
Liability insurance	5.60
Explosives	13.38
Supplies and repairs	5.71
Development	1.67
Total mining cost	100.00

The ore from both mines is trucked to the Duenweg mill of the Federal Mining and Smelting Company, approximately four miles distant, for treatment. Transportation and milling charges are by contract, so they have not been included in the above costs figures. Development charges are entirely costs of surface churn drilling. Culling and breaking boulders are usually a milling charge, but under the existing setup the milling and transportation charges do not start until after the ore has been broken through the grizzly and goes into the surface hopper, from which it is transferred into 10-ton, semi-trailer trucks by the Federal Mining and Smelting Company employes.



Hopper and derrick at Henckel No. 2. Ore chutes are arranged for loading 10-ton semi-trailer trucks

Conclusion

Neither the Henckel nor the Smith ore body would probably have been exploited under normal conditions, but they have proven to be a valuable addition to the District's concentrate reserves and will have contributed a substantial tonnage to the all-out war effort.

The author wishes to express his appreciation to John J. Inman, District Manager, for permission to publish this article, and for his helpful criticism of the completed paper. He is also appreciative of the helpful suggestions and criticism of Ralph E. Calhoun, Assistant District Manager, under whose supervision the development and mining operations were carried on.

Engineering Draftsmen Needed

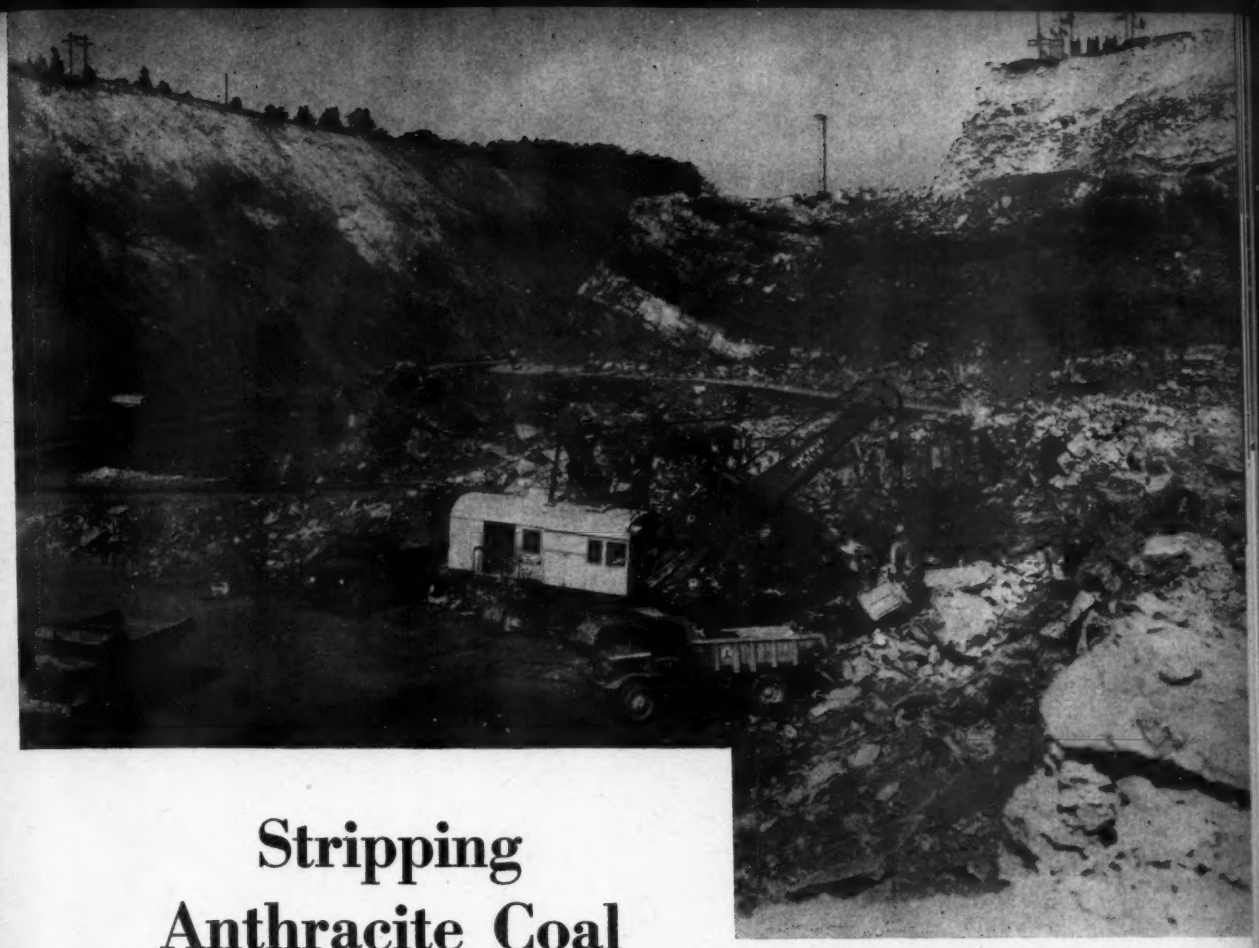
THE Civil Service Commission has announced a continuing need for engineering draftsmen to work on the construction of maps, strategic posters and graphs, and technical plans in various government agencies in Washington, D. C., and in other parts of the country. Women are particularly urged to apply. There are approximately 300 vacancies in Washington alone, existing largely in the Coast and Geodetic Survey of the Department of Commerce, in the Geological Survey of the Department of the Interior, and in various bureaus in the War and Navy Departments. Positions for men only are open in Pearl Harbor.

Salaries range from $1,752 to $3,163 a year, including the amount for required overtime. For the $1,752 grade, applicants must have completed a drafting course in high school, college, or drafting school, or have completed a war training course in drafting, or have had three months of practical experience. Training or experience in commercial art, interior designing, or similar fields is considered qualifying. For the higher grade positions, the experience or training must be progressively more difficult and responsible. There will be no written test and there are no age limits.

Applications will be accepted in the Civil Service Commission until the needs of the service have been met. Each applicant must submit with his application a sample of his drawing and lettering. The proper form for applying may be secured at first and second-class post offices, from the Commission's regional offices, or direct from the central office of the Civil Service Commission in Washington 25, D. C.

Appointments to Federal positions are made in accordance with War Manpower Commission policies and employment stabilization programs.





Anthracite stripping operations at Locust Gap, Pa.

Stripping Anthracite Coal

Many Notable Changes have taken place in Anthracite Mining in an Effort to Produce Larger Tonnages to Meet Accelerated Demands

By WILLIAM H. LESSER

Pierce Management
Scranton, Pa.

A PRODUCTION of nearly 10 million tons of anthracite coal from stripping during 1943 is a noteworthy achievement; because of the wartime restrictions of equipment required in stripping operations, the lack of skilled operators, and the increasing scarcity of desirable projects. Not only during the past several years has production increased, but since 1915 there has been a consistent increase in the tonnage obtained from strip mining. Table I shows the anthracite production from strippings since 1915.

During the period from 1915 to 1930, the production from strippings increased 125 percent; while from 1930 to 1943, nearly a similar period, the increase was 291 percent. Likewise, from 1915 to 1930, its percentage of the fresh-mined total increased 170 percent; while from 1930 to 1943 the increase was 400 percent.

Such a marked increase developed only because certain conditions affected strip mining favorably, and the most important were: (1) the accelerated wartime demand for fuel; (2) the greater production per man as compared with the inside worker; (3) lower colliery operating costs; and (4) the procuring of coal sooner and with less development cost than that required in an underground mine.

The latter foregoing condition is of definite importance at properties where the coal lies on heavy dips, and where a sizable investment must be made in rock work before a ton of coal can be mined. During the past decade, a poor business situation made it difficult for mine managements to set aside the necessary funds for development work; and they, therefore,

TABLE I.

ANTHRACITE MINED FROM STRIPPINGS, 1915 to 1943

	Total tons Strip Coal	Percent of fresh-mined Total
1915.....	1,122,000	1.3
1920.....	2,054,000	2.5
1925.....	1,578,000	2.7
1930.....	2,526,000	3.7
1939.....	5,486,000	11.4
1940.....	6,353,000	13.3
1941.....	7,316,000	14.3
1942.....	9,071,000	16.7
1943.....	9,900,000	18.4

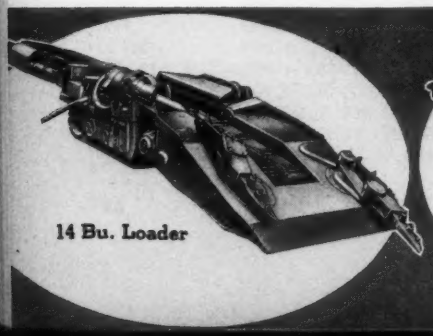
COAL ★ BAUXITE ★ POTASH

OR ANY OTHER MATERIAL IT MAKES NO DIFFERENCE TO JOY EQUIPMENT

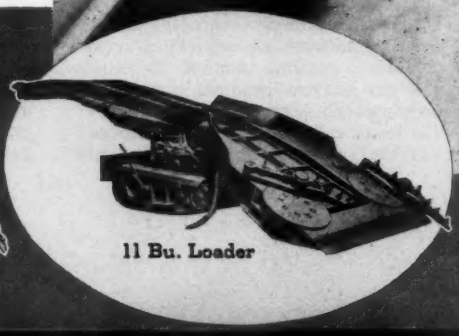
The men who work the tough jobs know what a big help it is to have rugged, dependable equipment that gives the maximum service between overhauls. That's one reason many of them work with JOY . . . whether they are mining high or low seam coal, aluminum-bearing clay, dusty white potash or other materials.

For, no matter where they're operating underground, Joy Shuttle Cars and Loaders have proved their worth time and time again in speeding up output and reducing operating costs.

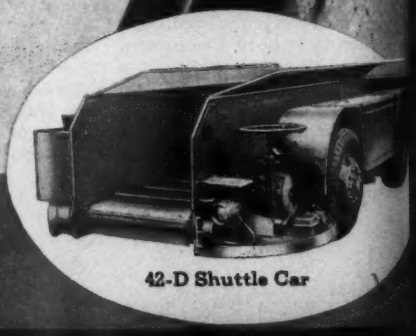
A survey by a JOY Engineer costs you nothing . . . yet may be the very answer to your problem. May we be of service?



14 Bu. Loader



11 Bu. Loader



42-D Shuttle Car





Working under difficulties... a 32" Shuttle Car and Loader.

The 11 Bu. Loader is invaluable for loading in hard rock mines.



This JOY 42" Shuttle Car loading onto a conveyor belt graphically tells a story of fast, quantity production.



32-D Shuttle Car

JOY

MANUFACTURING COMPANY
FRANKLIN, PA.

Consult a Joy Engineer

have turned to strippings from which tonnage can be obtained without a heavy development charge.

Stripping Contracts

Stripping contractors have made their contribution to the situation by entering into contracts with mining companies on a salvage basis, which require payments for coal only when it is delivered to the mine operator. Under these conditions, the contractor invests in the equipment, and removes sufficient overburden to expose coal before he receives any compensation. Obviously, then, the mining company has no development cost for the tonnage thus obtained.

Contracts on a salvage basis, and especially those involving big projects are attractive only to those contractors with assets capable of carrying the initial investment, and of financing periods during which no coal is produced. They have also developed a group of high grade contractors, one of whom was recently called to England for the purpose of advising the coal industry of that nation concerning certain stripping projects. There are still many contracts made on the yardage basis.

History

Unlike iron ore strippings, from which millions of tons of ore come from a single pit in a flat country, anthracite strippings are scattered over an area of 450 square miles, but concentrated to a marked degree in the Southern Field in an area of 300 square miles. Here the surface is mountainous and rough, and the coal lies in seams on heavy dips. Strippings in areas with the foregoing topography consist in removing the overburden from outcrops, or from basins not too far below the surface as to preclude a profitable operation.

Anthracite coal has been stripped since 1800. First by hand and horse-drawn two-wheeled dump carts; then by steam shovels, dump cars, and steam locomotives; and now by Diesel engine-operated shovels, or electrically-operated shovels using purchased power, together with automobile dump trucks. At the present time there are around 500 shovels in operation on stripping projects. The successful and profitable management of an activity involving an equipment investment of that magnitude, and its concomitant organization of workers represents a period of over 100 years of pioneering and research shared by coal mining companies, stripping contractors, shovel builders, and powder manufacturers.

Shovel Design

Modern electric shovels and draglines involve structures designed to stand the severe strains developed when loading rock; together with motors and controls capable of spotting a bucket on the end of a swinging rope where and when it can be fully loaded.

Metallurgists have made their contribution by producing the special alloys of steel required by the power transmission machinery and buckets. And, finally, after the shovel is designed, built and ready to operate, there is the shovel operator upon whose skill in handling a 25-yd. bucket on the end of a 180-ft. boom depends the profit prospects of the entire investment.

The application of a new principle to the control systems of excavating equipment has improved, materially, the operation of electric shovels. Electrically speaking, it consists of a quick-response, high-amplification generator used to excite the fields of the main generator on the shovel. Tests over a long period of time show these improvements: (1) increased output because of faster acceleration and retardation; (2) better regulation because the machinery is not subjected to excessive current and torque peaks; and (3) lower repair costs because of smoother operation of the mechanical parts. The apparatus is also used as a power factor regulator to reduce line-voltage fluctuations which have been reduced as much as 70 percent in a certain installation.

Present Trend

With the advent of draglines having longer booms and buckets of greater capacity, the trend in anthracite stripping is this: areas that were stripped several years ago with the equipment then available are now being restripped at a profit both to the contractor and mine operator. Recasting overburden, handling more rock, deeper pits, difficult transportation; all are problems connected with restripping operations. Then there is every evidence that the ratio of overburden to coal removed will increase, as the technique of operating strippings improves.

Cleaners

On account of the large lumps of coal loaded by big shovels into railroad cars for shipment to breakers, difficulty is experienced in getting them through the hopper doors at the unloading points. To obviate this, it is necessary to build primary cleaners, at some strippings, containing rolls to break the large lumps to a size that will pass through the doors. In addition to rolls, these plants may contain picking tables for the purpose of removing slate and rock, thus avoiding a freight charge on a product with no value.



Much of Pennsylvania's anthracite stripping is done by dragline

Blasting Practice

Better blasting practice, breaking a rock overburden into smaller lumps, has resulted in a more continuous operation of shovels which is of utmost importance, because the equipment in some strippings represents an investment of around a half million dollars. An investment of this size cannot remain idle while large lumps of rock are being broken to facilitate loading.

The last ten years recorded a trend from 6 to 9-in. diameter drill holes. These advantages followed the adoption of the larger drills: (1) appreciably higher drilling speeds are possible because of their greater weight; (2) the necessity of springing the bottom of holes is obviated; (3) they make it possible to space holes farther apart; and (4) the larger hole takes a heavier charge of explosive.

Deck-loading of blasting holes has contributed to a more efficient blast-

ing practice. It consists in concentrating the explosive in that section of the hole where the strata is the hardest; thus a hole with hard, medium, and soft sandstone is charged with different weights of explosive in those respective locations. To be successful, it is necessary to keep careful records of the hardness of the rock drilled through. Shots, taking as much as 50 tons of explosive, are fired; and the ease with which the broken rock is loaded constitutes the yardstick to measure the efficiency of the shot. A progressive stripping organization usually has a man well trained in blasting who is assisted by experts from powder companies when a big shot is contemplated.

Transportation

Automobile trucks, driven either by Diesel or gasoline engines, are generally used to transport the overburden and coal from anthracite strippings. The 10- or 12-ton end-dump trucks seem to be the popular size, although there are in operation a few 21-yd. trucks. Contractors have recognized the fact that good roads keep truck repair costs low; hence, bulldozers, road-making machinery, and water-sprinkling wagons are used to maintain them.

Where grades permit, the standard gauge railroad track is taken into the strip pit, which makes it possible to load coal directly into railroad cars for transportation, in some instances, to breakers several miles from the stripping. Other coal transportation jobs consist of trucking the coal to a dump chute from which it runs into railroad cars, or to a bin from which it is discharged into a conveyor and thence into a breaker.

Shovel Repairs

So extensive is the equipment required to operate several strippings that the prominent contractors operate their own sizable repair shop for the purpose, not only of maintaining the equipment in good condition, but of making new parts to replace those discarded on account of wear. Credit is due these shop organizations for the major repair jobs they do successfully, and with dispatch. Doubtless, the difficulty now experienced in securing repair parts from shovel manufacturers is the urge to make in the shop, those parts which would have been considered impossible a few years ago.

The shops are well equipped with electric and gas welding outfits, lathes, planers, shapers, hydraulic presses, forges, and a section devoted to truck repairs. Good equipment maintenance is reflected in operating records such as the following: an electric shovel with an 8-yd. bucket, a 200-ft. boom, working three shifts over a long period of time showed a 5 percent loss in operating time due to breakdowns, changing ropes, and making necessary repairs.

Safety

Industry production per fatal accident, during the past decade, has shown an improvement. It has, no doubt, been affected favorably by the tonnage from strippings, and refuse banks where accident rates are lower than in the underground mines. The fatality rate in strippings alone is 1 to 10 as compared with that in deep mines.

Regulation

It is possible that the stripping industry, both in the bituminous and anthracite coal mining areas, will be subjected to state regulation, as recommended by a State Commission. So important are strippings in the Lehigh and Schuylkill regions of the anthracite field that any bills affecting their operation will make it unprofitable to operate some properties. Regulation would seem inadvisable now, when the demand for coal is critical, and manpower limited. A committee of the legislature recently toured the region for the purpose of getting first-hand information on the stripping industry and its destruction of arable land.

Typical Operations

A few typical anthracite strippings are as follows:

Stripping No. 1—Size: 2,000 ft. by 300 ft. Seam stripped: Mammoth. Thickness of coal: originally 24 ft. thick but on account of being mined previously its thickness is now variable. Pitch of coal: between 30 and 50 degrees. Overburden: clay and



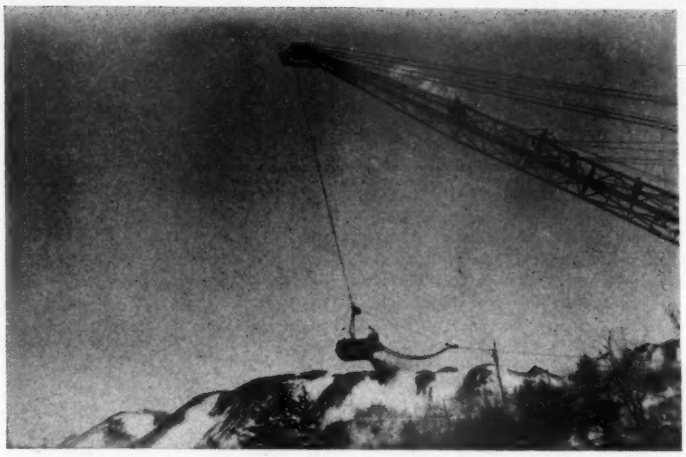
Anthracite coal loading operations involve extensive use of diesel shovels and trucks

gravel 15 ft., and 45 ft. of sandstone. Shovel on overburden: electric dragline (walking type). Size of bucket: 8 yds. Length of boom: 200 ft. Performance of shovel on overburden: operates three seven-hour shifts, and averages 250 yds. per hour. Delays of shovel on overburden: 5 percent of available operating time on account of changing ropes, and making necessary repairs. Shovel on coal: Diesel shovel with a 2-yd. dipper and a 27-ft. boom. Distance coal is hauled: 5,000 ft. Size trucks hauling coal: 7-yd. Number of coal trucks: depends upon the amount of coal exposed. Blasting holes: 9-in. diameter. Auxiliary equipment: two bulldozers, a road-making machine, a gasoline truck, two air compressors, and a water truck.

Stripping No. 2—Size: 1,000 ft. by 500 ft. Seam stripped: Mammoth. Thickness of coal: 25 ft. Pitch of coal: 30 degrees. Overburden: clay and gravel 7 ft., and 60 ft. of sandstone. Shovel on overburden: Diesel shovel with a 2-yd. dipper, and a 27-ft. boom. Performance of shovel on overburden: 130 yds. per hour, and it operates two 7-hour shifts a day. Shovel on coal: a dragline with a 2-yd. dipper and a 55-ft. boom. Performance of shovel on coal: 80 yds. an hour. Disposal of overburden: nine 11-yd. trucks on a dump 1,000 ft. from the pit. Transportation of coal: 9-yd. trucks at a chute 3,000 ft. from the pit. Blast holes: 6-in. diameter, spaced 16 ft. by 16 ft.

Stripping No. 3—Size: 4,500 ft. by 850 ft. Seam stripped: Holmes, 4-ft., and Mammoth. Total thickness of coal: 40 ft. Pitch of seams: between 22 and 55 degrees. Overburden: 6 ft. of clay and gravel, and about 48 ft. of rock of which between 20 and 30 ft. are hard conglomerate. Shovels on overburden: two electric shovels each with a 6-yd. dipper and a 37-ft. boom, and one with a 5-yd. dipper and a 38-ft. boom. Performance of shovels on overburden: a high of 300,000 yds. moved in one month working two 7-hour shifts and six days a week. Shovels on coal: two electric shovels each with a 2-yd. dipper and a 24-ft. boom, and one electric dragline with a 2-yd. bucket and a 55-ft. boom. The number of coal shovels in operation depends upon the coal to be loaded. Performance of shovels on coal: 35,000 tons of coal a month working a single 7-hr. shift. Disposal of overburden: 40 10- and 12-yd. Diesel dump trucks and two 21-yd. trucks transport the overburden a distance of 3,500 ft. Transportation of coal: by trucks to standard gauge railroad cars. Blasting: 14 9-in. blast hole drills. Blast holes are drilled on 16-ft. spacing. Auxiliary equipment: five bulldozers, one road sprinkler, one road grader, and an oil truck.

Stripping No. 4—Size: 3,000 ft. by 750 ft. Seam stripped: Mammoth. Thickness of coal: variable, 30 to 50 ft. thick. Pitch of coal: the coal lies in a series of folds with definite synclines and onticlines, the pitch, therefore is quite variable. Overburden: the total volume of overburden to be removed is around 4,000,000 yds., of which 1,000,000 yds. was deposited from a previous stripping project. The maximum depth of overburden is 170 ft. with an average depth of 90 ft., of this 12 ft. are clay while the remainder is rock. Shovels on overburden: one electric dragline with an 8-yd. bucket and a 200-ft. boom, and one electric shovel with a 3½-yd. dipper and a 30-ft. boom. Shovels on coal: one electric shovel with a 2¼-yd. dipper and a 25-ft. boom, and an electric dragline with a 2-yd. bucket and a 70-ft. boom. Disposition of coal: the coal is loaded into railroad cars—the standard gauge track is taken into the stripping. Disposition of overburden: when possible the overburden is back-filled into old pits, and when not possible to back-fill, it is trucked 3,000 ft. in 10- and 15-yd. Diesel trucks. Blasting: four 9-in. drilling machines are operated. The holes are from 80 to 140 ft. deep and spaced 15 ft. by 18 ft. Careful records are kept of the drill holes, because they are deck-loaded.



An 8-yd. bucket on a 200-ft. boom dragline strips 250 cu. yds. per hour

Stripping No. 5—Here will be operated, when erected, the largest shovel in the anthracite field—an electric dragline with a 25-yd. bucket, and a 180-ft. boom. A virgin basin of coal 70 ft. thick, 250 ft. below the surface will be stripped. The electric motors required to operate the shovel will have a total hp. rating of 1,750.

Conclusion

A survey of the many strippings now in operation in the anthracite coal mining area, indicates an activity never before even approached. Of course, the post-war period will witness a drastic reduction in production from strippings operated by the smaller contractor; but with a trend to larger excavating operations, the maintenance of an appreciable tonnage from strippings seems assured. The higher investment in equipment then necessary may make it expedient for mining companies to participate in them to a certain degree.

Fuel Conservation Manual

A FREE fuel conservation manual has been prepared by the Fuel Conservation Council for War. This book is the result of cooperative effort of the manufacturers of automatic controls, who are members of the Council. It indicates the purpose and application of the various types of controls in relation to the big national fuel conservation job now in hand. Entirely non-promotional in nature, the manual treats its subject from the educational and practical approach, is a valuable book for anyone connected with the heating or maintenance of any building other than family homes.

The book is available upon request from the Fuel Conservation Council for War, 500 W. Oklahoma Avenue, Milwaukee 7, Wis., or through any of 26 controls manufacturers identified with the Council, or can be obtained by writing this publication.

Rope Hoists For Moving and Resetting Conveyors

A Report to the Committee on Conveyor Mining

CONVEYOR mining, after passing through a number of experimental stages in which various types of mining systems were used, has more or less standardized on the room and pillar system with, of course, many modifications to meet varying conditions of height, roof, labor, tonnage and coal recovery. However, all of these have one basic characteristic—the conveyor equipment must be set up, extended, retracted and then moved to a new location. The moving operation in the early days was regarded as more or less incidental, or rather as a necessary evil about which nothing could be done, and it was believed that the ultimate answer would be a large tonnage to absorb the moving cost. This happy solution has not materialized; it is true the loading and the other face work have increased their efficiencies but the moving practice has stayed about where it was and high labor rates are making this a serious cost item that needs correction.

Rope Hoists Coming Into Use

Since coal mining is to be entirely mechanized, it necessarily follows that the equipment moving must be included in this mechanization plan and realizing this, a number of companies are now using rope hoists termed "rigging hoists" to take the conveyor equipment from one set-up to another. Methods vary. At the Annual Conference of our Coal Division in Pittsburgh last December, a mine was described that had a rope hoist mounted on a caterpillar chasis; this was for a panel with eight room conveyors and the hoist has considerable distance to travel. However, the more usual plan, as it is now developing, is in mines where three or four conveyor units are operated in a panel, and one hoist is installed that can easily transport itself by its own rope over the comparatively short distance.

Some typical operations are described in the following pages and it should be stated that, in each of these cases, the rope hoists have been in service two or three years, the managements report very considerable direct savings in time and labor have resulted in addition to indirect savings through increased tonnage.

In these descriptions it will be noted that the different mines have somewhat different methods for using the hoist in moving the equipment; mines A and B employ the cutting machine rope to some degree for this type of work while Mine C uses the hoist for moving all equipment—even the cutting machine itself.

While it is quite customary in a number of conveyor mines to employ the cutting machine rope for hoist service, there is a debatable question as to whether or not this is good practice. The management of Mine C are very decided in their belief that it is bad practice; the machine rope speed is slow, taking considerable time; its short rope necessitates frequent resetting of the jacks but further and most important in their minds is that the cutting machine is not designed for this purpose. In their experience such "mis-use" has resulted in considerable injury from burned out friction bearings and armatures, and they feel that one of the very appreciable advantages resulting from the use of the rigging hoist is in the reduction of repairs to the cutting machine.

Description of Hoist

The rigging hoists are specially designed for conveyor moving; they are light in weight—slightly over 1,200 lb.; mounted on a boat type base for easy self-transportation and their overall size—2½ ft. wide by 6 ft. long by 2 ft. high—makes them adaptable for usual conveyor mining conditions. A 5-h.p. motor is connected to the drum by planetary gearing with a friction clutch for gradual starting; the rope pull is rated 1,500 lbs. and its usual speed is 70 ft. per minute.

REPORT ON MINE A

Entry Development, Room Mining and Pillar Recovery

MINE A is in 36-in. seam of coal using hand-loaded conveyors for the entry advancement, room driving and pillar extraction. In this operation the conveyors discharge onto a 26-in. gathering belt laid in the panel entry and transporting the coal to mine cars on the main haulageway.

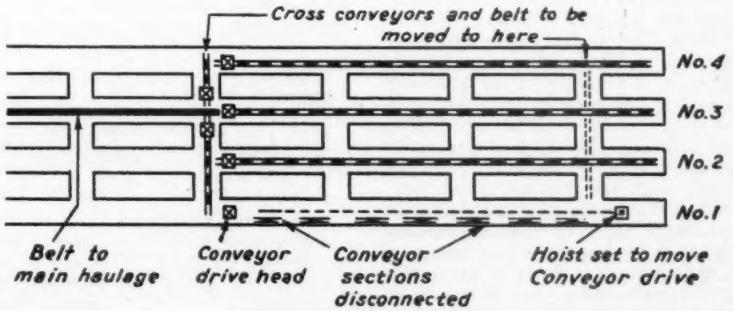


Fig. A-1. Entry development

The headings are driven 2,000 ft. to the panel limit and the rooms are then mined retreating, working to the right and left.

Entry Development

Figure A-1 shows the plan for developing a set of four panel entries. A conveyor is laid in each heading with cross conveyors leading to the belt as shown in the sketch. When the entries have been driven about 300 ft., a new setup is made; the cross conveyors are moved ahead and the belt extended accordingly.

As four entry and two cross conveyor drives and the tail of the belt conveyor all have to be transported a distance of 300 ft. the rope hoist plays an important part in this moving operation. The entry conveyor pans are first disconnected, the chain is broken and rolled into 12-ft. sections and these parts are laid aside to the rib as indicated on the sketch in entry No. 1, where they are left until needed for the subsequent extension as the entries advance. The drive section with its motor and chain together with the tail section of a cross conveyor is then pulled to its new location 300 ft. ahead by the rigging hoist which is set near the face as indicated in the sketch. This same procedure is followed in the other three entries. The hoist also moves the two cross conveyor drives; in this operation the cross conveyor intermediate sections are loaded onto the drive section and all are pulled forward together.

At this time the rigging hoist is also used in extending the gathering conveyor. The belt is disconnected at the head end on the haulage entry; the hoist pulls the tail section 300 ft. ahead to its new location, new belt sections, each 288 ft. long are then spliced onto the ends at the head section and the intermediate frames are carried in on the belt reversed.

Room and Pillar Mining

Figure A-2 shows the plan and conveyor setup in which four rooms are mined retreating; two on each side of the panel with their conveyors discharging onto the entry belt. The mine roof is exceptionally strong and the rooms are driven 40 ft. wide with face conveyors as indicated; when the room has reached its limit of 300 ft., a 40-ft. inby pillar is mined open end with the face conveyor, of course, swung to the inby side of the room conveyor. As the pillar is drawn back the room conveyor is shortened after each cut and the sections are taken out and stored in the entry adjacent to the next place to be mined.

When the pillar is completed all room equipment is then moved and reset to mine the next two adjoining places and the rigging hoist again plays an important part in this operation. As will be noted from the sketch, the rooms are at approximately 90-ft. centers so that the equipment has to be taken a distance of 180 ft. The hoist moves the conveyor heads to their new location; the cutting machine travels by its own rope and also drags with it the face conveyor. The belt is retracted 300 ft. following the practice described for the extension but in reversed order and moving the tail section with the rigging hoist.

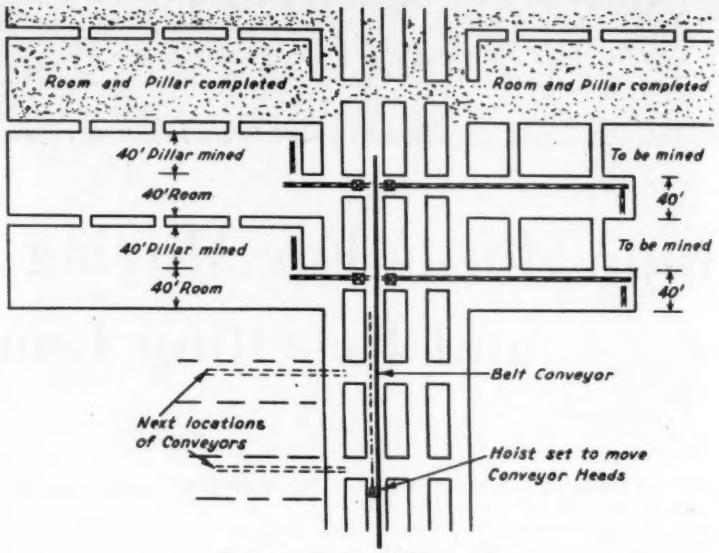


Fig. A-2. Room and pillar mining

REPORT ON MINE B

Entry Development and Room Mining

MINE B operates hand - loaded conveyors for entry advancement and room work in a seam whose height is 36 in. and greater. These conveyors discharge onto a chain gathering conveyor, 300 ft. long set in the entry and loading into mine cars through an elevating conveyor. The gathering conveyor, is moved ahead at 300-ft. intervals and the track extended accordingly; the arrangement for the conveyor setup and track is shown in Fig. B-1. The panel is developed by three entries with the haulage way in the center and an aircourse on either side; these are advanced 2,000 ft. to the panel limit and the rooms are then mined retreating.

Entry Development

Only two conveyors are used for driving three entries, operating as follows: Starting at the main haulage, a pair of headings are advanced a distance of 600 ft. in two conveyor set-ups, and when this point is reached the development is in the position as shown in Fig. B-1. It will be noted that a breakthrough is driven through the chain pillar until it crossed the line of the third entry. The gathering conveyor remains in place and the two entry conveyors and cross conveyors are then set up to work the third entry from this breakthrough; one drives back 300 ft. to meet the incoming entry and the second drives forward 300 ft. until it has reached abreast of the other two headings. When this is completed the gathering unit is reset 300 ft. ahead; the two conveyors are again set up to drive the entries in parallel and the operation is repeated until the panel limit is reached.

As will be seen, this method involves considerable equipment moving and the rigging hoist performs a very

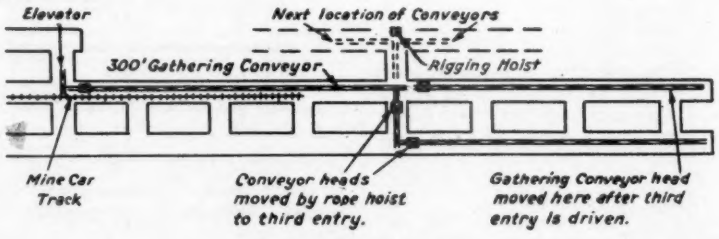


Fig. B-1. Entry development

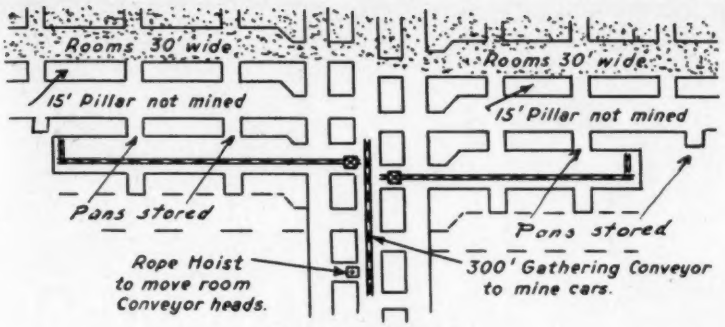


Fig. B-2. Room mining

effective service. The sketch indicates its position for moving the conveyor head sections into the third entry and for resetting the cross conveyor to transport their coal to the gathering unit. After this set-up has completed its development work the hoist again comes into use for moving the conveyor heads back into the first two entries and 300 ft. ahead. In this latter operation the hoist, which, of course, is self-transporting, goes to the face of the entries; the cutting machines move by their own ropes and carry the conveyor tail sections on the cutting bars. The advancing cutter has only to travel through the top cross-cut but the other machine has to go a distance of 600 ft. The gathering conveyor and the mine car loading station are moved at 300-ft. intervals as the entry advances; in this operation the rigging hoist moves the head and tail ends, the elevator and the intermediate sections, taking from 3 to 6 sections at a time.

Room Mining

After the entries have reached the panel limit the rooms are mined retreating, working two places simultaneously, one to the right and one to the left of the entries, as shown in Fig. B-2. The rooms are 30 ft. wide with face conveyors and the pillars are not recovered but on the advance, cross cuts are driven into the solid pillar, approximately to the rib line of the adjoining room. After the room is completed the rigging hoist moves the conveyor drive to its next location, a distance of 45 ft.; the cutting machine moves with its own rope dragging the face conveyor and carrying the tail section of the room conveyor on the cutter bore. The intermediate conveyor sections are disconnected and stored in breakthroughs which were driven into the solid pillar where they are in a convenient location for use in the outby room as its advance cuts into the breakthroughs. As the panel retreats the gathering unit is shortened by taking out sections and the head end is periodically moved back 300 ft.; all this is done with the rigging hoist as in the development work.

REPORT ON MINE C
Entry and Room Mining

MINE C operates in low coal with a development plan, mining system and conveyor arrangement very much the same as in Figures B-1 and B-2 except that duckbill loaders with shaker conveyors are used in the entry advancement and room driving. At the end of the shakers a 300-ft. gathering chain conveyor transports to an elevator which loads the mine cars; the track, however, instead of extending up the center entry parallel to the gathering conveyor as in Mine B, curves through the cross cut at the elevator and goes back down the third entry to the main haulage way. This is a conventional plan used in quite a number of conveyor installations and the switches on the main line are so arranged that the cars are not reversed.

The conveyor set-ups and moves follow a sequence similar to the procedure described for mine B. There is, however, one major difference; *the rigging hoist moves all the equipment*—drive heads, tails sections, intermediate sections (which are dragged in 50-ft. connected lengths) and even the cutting machines. The only exception is in taking single pans into an advancing room or entry.

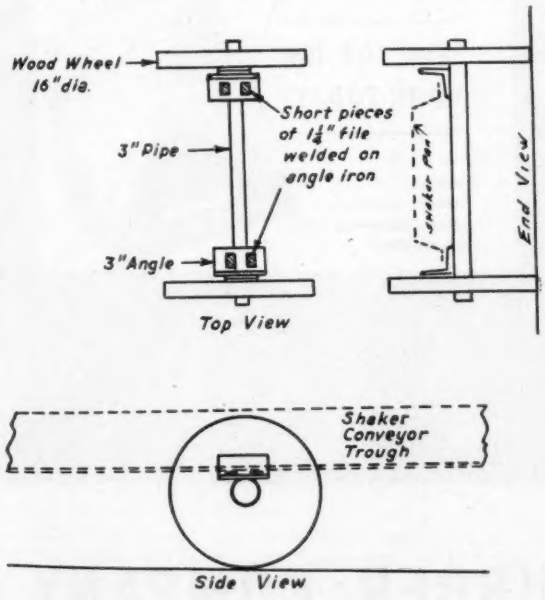


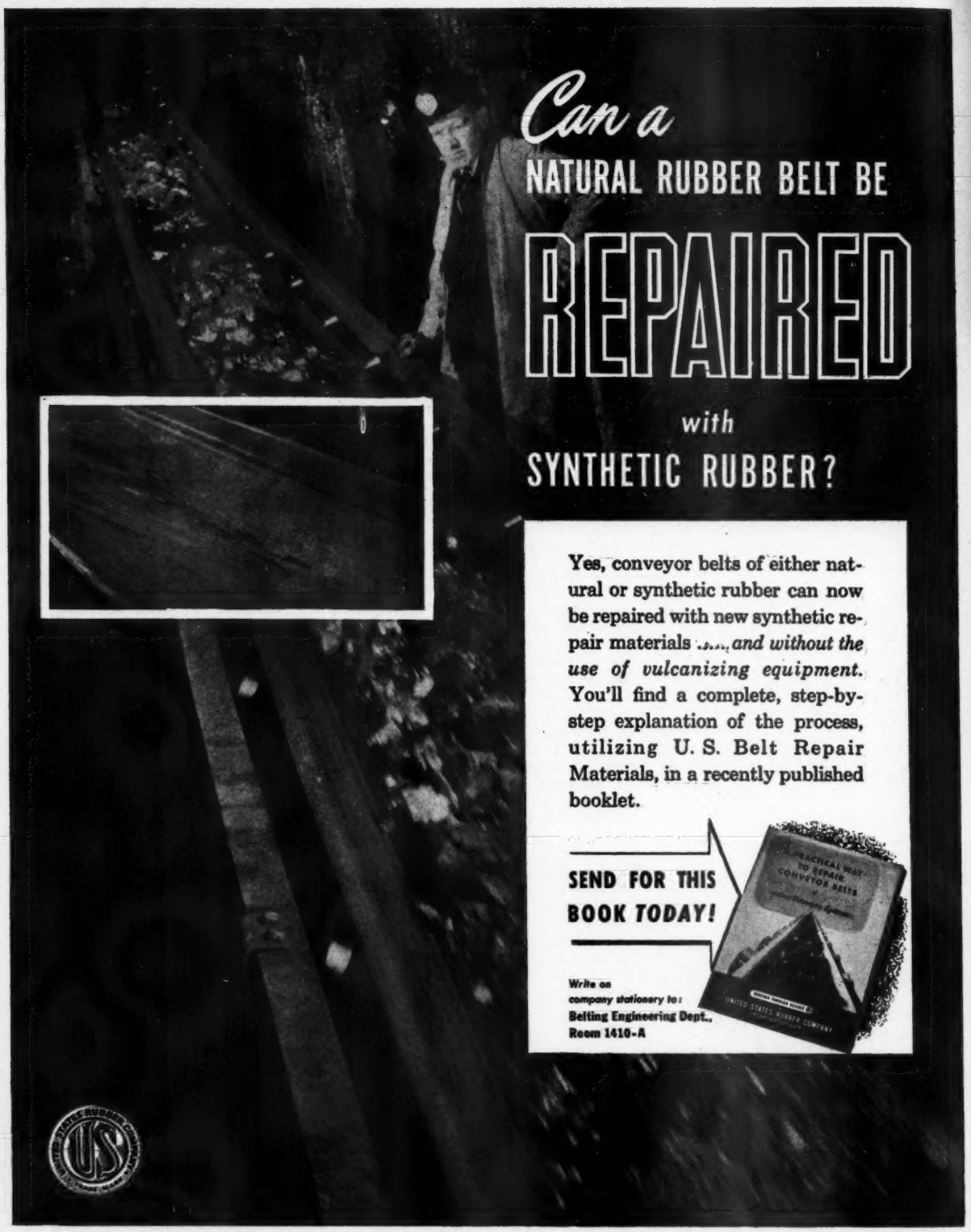
Fig. C

Wheels for Moving Pans

A particularly interesting development at this mine is a home-made device for transporting single shaker pans. This consists of a two-wheel truck illustrated in Figure C on which the pans are laid and wheeled by hand from one location to another. Two 16-in. wooden wheels 1½-in. tread are mounted on a 3-in. pipe axle; on this axle and inside of each wheel is welded a short piece of 3-in. angle iron; these are set at the proper gage to carry a shaker pan. When being transported the pan is placed on the angles at approximate balance and pushed as a two-wheel hand truck.

Some difficulty first encountered in designing a method to hold the pans in place was solved in a very clever way by welding two short pieces of heavy blacksmith file on the top of the horizontal leg of the angle. The shaker pan is inverted so that the flange rests on these file pieces which give sufficient friction so that the pan will not slide; as a matter of fact, this friction is so great that the pan will pull or push the wheels over large pieces of slate or other obstructions and still adhere firmly in place.

For transporting single sections of chain conveyor a four-wheel truck with a flat bed of ⅛-in. steel plate is used; this has a fifth wheel in front with a tongue and handle for pulling and guiding. These two devices are employed mainly in the room advancement and a travel way is maintained clear of slate between two rows of timbers from the entry to the face.



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Wheels of Government

As Viewed by A. W. Dickinson of the American Mining Congress

THE night of Friday, June 23, saw the recess objective attained and the members of Congress heading for their homes, states and districts for a few weeks of campaign activities until the August 1 date set for reconvening. It is thought that the balance of the summer, until after Labor Day in early September, will be devoted to a series of three-day recesses, or to a further adjournment which will permit members to stay home until nearly mid-September.

The President has signed the departmental appropriation bill, as well as the extension of the Price Control Act and the War Contracts Termination Bill which the hard-working Senators and Representatives and their staffs strove so diligently to put in final form before leaving Washington.

Tax Studies

Now under way is a post-war taxation study by the staff of the Joint Committee on Internal Revenue Taxation and representatives of the Treasury and the Bureau of Internal Revenue. Following the recommendation of the Baruch-Hancock report with regard to post-war tax policies, Chairman and Vice Chairman Robert L. Doughton and Walter F. George of the Joint Committee have added one Republican Senator and one Republican Representative to the committee membership to assure bi-party equality. Personnel of the committee now consists of Senators George of Georgia (vice chairman), Walsh of Massachusetts, Barkley of Kentucky, LaFollette of Wisconsin, Vandenberg of Michigan and Taft of Ohio; together with Representatives Doughton of North Carolina (chairman), Cooper of Tennessee, Disney of Oklahoma, Treadway of Massachusetts, Knutson of Minnesota and Reed of New York.

Senator George and Mr. Doughton have expressed the belief that those participating in the study should be able to arrive at a determination of "what taxes, if any, we might repeal and what taxes we might reduce," in case current tax revenues are found to be more than enough to meet post-war demands.

Washington Highlights

RECESS: Congress closed shop June 23 to return August 1.
POST-WAR TAXES: Joint Committee Staff and Treasury conducting study.
CONTRACT TERMINATION: Bill enacted but John Hancock refuses Board chairmanship.
SURPLUS DISPOSAL: Subcommittee Chairman Murray approves "freezing" metal stocks.
PRICE CONTROL: Extended one year with restrictions eased.
HOWARD I. YOUNG: Returns to his company in St. Louis after 18 months' service with WPB.
LOANS AND RELIEF: For mines, contemplated in bills recently introduced
MONETARY: World currency stabilization conference now on in New Hampshire.
WLB HEARINGS: Western and Lake region wage issues considered.
TRAVEL-TIME PAY: Early ruling expected from Appellate Court in Jewell Ridge case.

Demobilization Activities

Watchful and concerned over what they felt to be the slow progress of Congress in enacting demobilization legislation, Bernard Baruch and War Mobilization Director Byrnes in early June pressed for action on war contracts termination, "human demobilization" and surplus property disposal. At Byrnes' suggestion, the Senate Committee on Military Affairs made public a letter which they had received from Baruch calling for more speed. Said Baruch "For the good of all of us, but mostly for the sake of our soldiers and sailors, let us hurry, hurry, hurry, not only in winning the war, but in being ready for the peace. Delays jeopardize both these objectives. The nation is still months away from being prepared to meet the great adjustments that will come on that unknown X-Day when one of our enemies is defeated. Further delays and inaction can only make our readiness ever more distant and will turn the adventure in prosperity that lies within our grasp into an adventure in adversity."

While much preparatory work has been done on both "human demobilization" and the necessary legislation for surplus property disposal, by both Senator George's Committee on Post-War Planning and the Senate Committee on Military Affairs, it now appears that final action on these measures will go over until fall.

Contract Termination

On July 1, the President approved the George-Murray War Contracts Termination Bill over which, with one exception, there has been a minimum of difference between the Senate and the House. This one exception was the position taken by the House Committee on Military Affairs in insisting upon a pre-audit of terminated war contracts by the office of the Comptroller General. Opposition to such pre-audit arose from the knowledge of the interminable delays which would be brought about, and the House overwhelmed its own Military Affairs Committee in its final action on the measure.

As the new law now stands, there is provided an Office of Contract Settlement, together with a Contract Settlement Advisory Board, and contracting agencies are authorized to settle all

or any part of a war contract's termination claim either by agreement with the contractor or through determining the amount due on the claim. In case of agreement with the contractor, the settlement made is final; when the government terminates the contract, 100 per cent is paid on completed items and a 90 per cent advance is made on raw materials and labor costs, with a reasonable percentage on additional allowable costs.

There are parts of two sections in this law which are being closely studied by mineral producers who have expended money in the development and equipment of mining properties to make available metals and minerals essential to the prosecution of the war. The sections follow:

"Defective, Informal, and Quasi Contracts

"Sec. 17. (a) Where any person has arranged to furnish or furnished to a contracting agency or to a war contractor any materials, services, or facilities related to the prosecution of the war, without a formal contract, relying in good faith upon the apparent authority of an officer or agent of a contracting agency, written or oral instructions, or any other request to proceed from a contracting agency, the contracting agency shall pay such person fair compensation therefor.

"(b) Whenever any formal or technical defect or omission in any prime contract, or in any grant of authority to an officer or agent of a contracting agency who ordered any materials, services, and facilities might invalidate the contract or commitment, the contracting agency (1) shall not take advantage of such defect or omission; (2) shall amend, confirm, or ratify such contract or commitment without consideration in order to cure such defect or omission; and (3) shall make a fair settlement of any obligation thereby created or incurred by such agency, whether expressed or implied, in fact or in law, or in the nature of an implied or quasi contract.

"(c) Where a contracting agency fails to settle by agreement any claim asserted under this section, the dispute shall be subject to the provisions of section 13 of this Act. (*This is the section providing for appeals to the Appeal Board.*)

"(d) The director shall require such contracting agency to formalize all such obligations and commitments within such period as the director deems appropriate."

"Sec. 3. (g) The term 'contracting agency' means any government agency which has been or hereafter may be authorized to make contracts pursuant to section 201 of the First War Powers Act, 1941, and includes the Reconstruction Finance Corporation and any corporation organized pursuant to the Reconstruction Finance Corporation Act (47 Stat. 5), as amended, the Smaller War Plants Corporation, and the War Production Board."

Stockpiling

Although still in the stage of congressional committee consideration, this important subject continues to bubble in departmental circles. Early in June, Surplus War Property Administrator Will Clayton submitted to the Senate Military Affairs Subcommittee a tentative draft of a "Surplus Property Act." The measure fails to refer to the "freezing" of metal and mineral stocks as a permanent defense reserve, but covers the overall subject of disposal of surplus property, real or personal, including plants, facilities, equipment, parts, materials and supplies of all kinds. Later in the month Clayton discussed his bill with Senate and House committees, speaking of the needs which will arise for great administrative discretion and flexibility. He stressed the sheer physical size of the problem, the variety of surpluses to be handled—including all types of property grown, mined or manufactured—and the necessity for guarding the best interests of the nation. He also recognized that specific legislation may be required for classes of property requiring special treatment and said that "there are certainly some types of property where this is highly desirable, and there may be many."

Significant, too, is the statement of Senator Murray, who is chairman of the Military Affairs War Contracts Subcommittee considering surplus property disposal legislation. In a letter written in response to an inquiry from Senator Hayden of Arizona, Murray said: "I am in complete agreement that there should be a reserve of critical and strategic minerals and metals held for the use of the Army and Navy for the national defense against a possible future emergency, and I shall have a clause placed in my bill to accomplish this necessary purpose."

An indication of War Department attitude is shown in the most recent Regulation No. 7 covering disposition of property, wherein are specific provisions with reference to stockpiling of strategic and critical materials. In dealing with contract termination inventories, provision is made for prompt disposition when transferred to the government, with the exception of "stockpile items." Such items are to be reported to the chief of service having jurisdiction over termination proceedings, who is required to determine promptly what items should be retained for stockpiling. The general policy is understood to be that stockpile items, which include some 42 mineral commodities, are to be withheld from liquidation and that they may be placed in permanent stockpiles when proper authority is granted by Congress.

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Price Control

In addition to extending price and wage control to June 30, 1945, the bill approved by the President June 29 facilitates protests to the OPA and the Emergency Court of Appeals. The court can specify a time limit within which OPA must act upon a complaint, otherwise the order or regulation concerning which the complaint is made is voided. Another feature permits persons accused of violation to set up as a defense that the violation was not intentional and that "practical precautions" had been taken to prevent violation. A further curb prohibits OPA from issuing regulations requiring determinations of cost otherwise than in accordance with established accounting methods, and by a further limitation, OPA is not permitted to use its powers to compel change in established business practices except where necessary to prevent evasion of the Act's requirements. Consultation with industry committees is made mandatory.

An amendment by Senator Taft of Ohio prohibits OPA, RFC or any other government corporation, after June 30, 1945, from making any subsidy payments or buying any commodities for the purpose of selling them at a loss unless Congress has specifically appropriated money for such purpose. Clarified by the Senate and House conferees, it is, however, distinctly provided that Congress may appropriate money for any "subsidy" program deemed necessary after June 30, 1945. The Premium Price Plan for copper, lead and zinc, which is now set to expire July 31, 1945, is thus made dependent upon congressional action for its continuation to that date.

Howard I. Young Leaves WPB

On July 1, WPB Chairman Donald M. Nelson announced that Howard I. Young of St. Louis is leaving the war agency, to devote his full time to the affairs of the American Zinc, Lead and Smelting Company, of which he is president. As is well known, Mr. Young is also president of the American Mining Congress and of the American Zinc Institute. After 18 months of unselfish and devoted service to the nation and to the mining industry, Chairman Nelson warmly congratulated Mr. Young, saying in part: "During the time you have been with the Board, you have made an outstanding and patriotic contribution to the war effort and I want you to know that you have my personal appreciation, as well as that of the Board."

Mr. Young joined the staff of WPB in January, 1943, after repeated urging by H. W. Dodge who served with distinction as assistant to the Director General of Industry Operations. Mr. Dodge's insistent request that Mr. Young come to Washington followed the meeting of these two outstanding men at the American Mining Congress War Metals Conference in Salt Lake City in November, 1942. As the result, Mr. Young was appointed director of the Minerals Bureau and Mineral Resources Coordinating Division, and in January of this year, was made Deputy Vice Chairman for Metals and Minerals.

Mine Loans

An expansion of the Reconstruction Finance Corporation mine loan authority is contemplated in a bill introduced by Representative Clair Engle of California, through amendment of Section 14 of the RFC Act. Under the present law, provision is made for loans to operating companies and also for development loans, which may not exceed $20,000 with an additional loan of $20,000 if justified by results of the work undertaken. In the proposed bill, the limitation is removed and the problems of gold mines growing out of the shutdown order, L-208, are recognized. Text of the amendment is herewith presented:

"Sec. 14. The Reconstruction Finance Corporation is authorized and empowered to make loans upon reasonable security to applicants desiring to examine and make accessible mine workings and to mine, mill, or smelt ores. In determining what constitutes 'reasonable security' the corporation need not look beyond the assets involved in the immediate mining operation, including the real and personal property involved therein, where it is reasonably certain that the proceeds from the development and mining of ore bodies and the beneficiation and marketing of the products therefrom will result in repayment of the loans. Regardless of any order issued by any government agency restricting the operation of gold, silver, or other mines, the corporation shall receive and process applications for loans on such properties currently and prior to the withdrawal or rescinding of any such order and shall, immediately upon the withdrawal or rescinding of such order or orders or other government restrictions, make the loan available to the applicant. Loans shall be made available for the rehabilitation and operation of gold mines or other mines the operations of which have ceased or have been curtailed by War Production Board Limitation Order L-208 dated August 31, 1942, as amended, or any other such order or government restriction, in such amounts as shall be necessary therefor: *Provided*, that there shall not be allocated or made available for all such loans a sum in excess of $25,000,000."

Engle has also introduced two mine relief bills, the first similar to Senator Murray's bill, S. 344, which provides court relief through suspension orders to persons who have been prevented from making payments or performing work on mining properties which they hold under contract because of inability to obtain labor, power, supplies, or equipment, or because of the operation of government rules or regulations. This bill also contains RFC loan provisions to meet taxes and other obligations. Engle's second relief bill includes the court relief features but omits the RFC loans, and the Congressman has been able to have this bill placed under the jurisdiction of the Committee on Mines and Mining, where he is chairman of the Subcommittee on Precious Metals. The first bill has been sent to the Committee on Banking and Currency where, in the past, considerable difficulty has been encountered in securing action on this type of legislation.

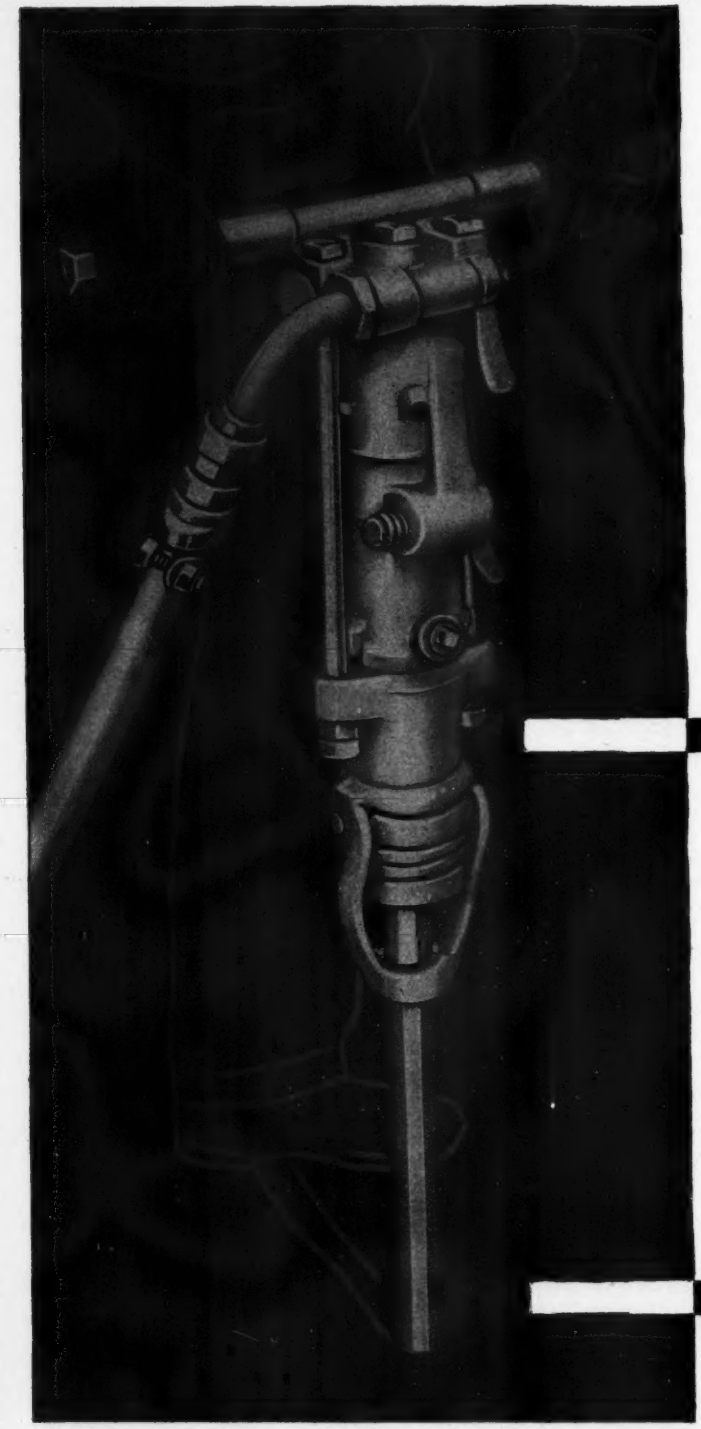
International Monetary Stabilization

Now under way at Bretton Woods, N. H., is the International Monetary Stabilization Conference in which representatives of 42 nations are participating. United States delegates for the three weeks of sessions are headed by Treasury Secretary Morgenthau and include Dr. Harry White, monetary advisor; Dean Acheson, Assistant Secretary of State; Marriner S. Eccles, Chairman of the Board of Governors, Federal Reserve System; Fred M. Vinson, Director of Economic Stabilization; Dr. Mabel Newcomer of Vassar College; Edward F. Brown, First National Bank of Chicago and President of the Federal Advisory Council of the Federal Reserve System; Senators Robert F. Wagner of New York and Charles W. Tobey of New Hampshire, and Representatives Brent Spence of Kentucky and Jesse P. Wolcott of Michigan.

A summation of the conference problems includes (1) promotion of international monetary cooperation through a permanent institution; (2) expansion of international trade to maintain a high level of world employment; (3) creation of a world fund of gold and currency on which member nations may draw to correct maladjustments in their balance of payment; (4) promotion of exchange stability, to maintain orderly exchange among member countries and to avoid competitive exchange depreciation; (5) setting up of multilateral payments facilities on current transactions among member nations, and elmination of foreign exchange restrictions; and (6) shortening of periods and lessening of the degree of disequilibrium in the international balance of payments.

The recent lend-lease of 100 million ounces of silver by the U. S. Government to the Government of India lends emphasis to the probability of consid-

(*Continued on page* 64)



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Mine Inspectors' Institute of America

35th Annual Convention at Charleston, W. Va., discusses many phases of coal mine safety

SOME 350 delegates and guests from 21 states, together with 19 chief state mine inspectors attended the thirty-fifth annual convention of the Mine Inspectors' Institute of America, June 5 and 6 at the Daniel Boone Hotel in Charleston, W. Va. Men, well known throughout the coal industry, took part in the program; on Monday morning the convention was opened by Jesse Redyard, chief, Department of Mines of West Virginia; welcoming addresses were made by Honorable D. Boone Dawson, mayor of Charleston; C. W. Connor, vice president of Colcord Coal Company, and P. A. Grady, president, Mine Inspectors' Institute of America. At the annual banquet Monday night the guest speaker was the Honorable Mathew M. Neely, governor of West Virginia.

A very interesting feature of the opening session was a talk "A Trip Down Under," by Henry F. Hebley, acting research director of the Pittsburgh Coal Company, who spent six months in Australia for the United States Board of Economic Warfare. He discussed little-known facts regarding New Zealand and showed a most interesting film illustrating geographical and industrial features of that country.

The three following sessions, Monday afternoon and Tuesday gave a series of constructive papers and discussions on various phases of safety, calling attention to sources of accidents and outlining methods to eliminate them.

Mine Explosions

The session on Monday afternoon was devoted entirely to the subject of "Lessons to be Learned from Recent Mine Explosions," with papers by four chief state mine inspectors: J. A. Welch, of Tennessee; O. H. Youngblood, of Alabama; G. Moss Patterson, of Kentucky; Jesse Redyard, of West Virginia, and a summary by Edward H. Denny, chief of the Coal Mine Inspection Bureau, United States Bureau of Mines, Pittsburgh, Pa. These speakers discussed mine explosions that had occurred in their various districts, describing details, analyzing the causes and showing how they might have been prevented. In several cases, the primary cause was accumulated methane in abandoned workings or in gob areas which was released into the mine ventilating circuit where it was subsequently ignited.

Mr. Youngblood cited an instance of this nature and said: "Positive ventilating pressure should be maintained against all caved areas from the working area side and a negative pressure maintained by means of bleeder entries so that it is not possible for explosive gas to accumulate in caved sections. Air containing methane should not be coursed through working places where non-permissible equipment is operated."

Mr. Patterson also discussed worked-out areas, saying in part: "We have had in Kentucky cases in which gas was accumulated in worked-out sections of non-gassy mines, and one of the first and one of the most important lessons to be learned is that all worked-out unventilated sections of bituminous coal mines will accumulate methane, even though the mine itself has always been free from gas. Moreover, there is nothing more dangerous than a flame safety lamp in the hands of a man who does not know how to handle one. Particular attention should be given, in the training of these men, to teaching them the difference between the reaction of air with a high methane content and air with a low oxygen content on the flame of a safety lamp."

He further spoke of the self-rescuers and the importance of training men in the use of barricades, giving as an example: "Eighteen men were working in the section; seven were killed by the violence of the explosion, five were overcome by carbon monoxide, and six were rescued unharmed after 12 hours behind a barricade which they had erected. The five men who were overcome by carbon monoxide could have been saved had they been equipped with self-rescuers."

Mr. Welch also spoke of barricades, describing one explosion where "18 others erected a barricade and were rescued uninjured after remaining in their improvised safety shelter about seven hours; when they were found by rescue parties and advised that ventilation had been restored. They then walked to the outside of the mine."

Mr. Redyard said in part:

"The severity of mine explosions has been reduced considerably during recent years. Mine officials, through their sincere efforts and vigilance, deserve much of the credit for this success. Science has been an effective aid and is being enlisted more and more, but success will be attained ultimately only by fullest cooperation of both management and employes.

"The four main factors involved in a mine explosion are (1) There must be an explosive substance, such as that used in blasting, dust, or an accumulation of gas. (2) A source of ignition which may be an open light or an electric arc. (3) An oxidizing agent; an atmosphere containing more than 12 percent of oxygen, and (4) The time element which involves the simultaneous occurrence of the three above factors. Usually a fifth factor is involved—the human factor—as heretofore stated, which permits or causes the coincidence of the other factors."

Mr. Denny, in presenting a review of the papers presented said:

"In normal mine operation the continued presence in all working and traveled parts of a mine of the factor 'an oxidizing agent, an atmosphere containing more than 12 percent of oxygen' is essential to human life, and, in general, our mine air contains practically the same 20.93 percent oxygen present in the outdoor atmosphere; it is only in cases such as atmosphere behind the fire seals that measures to eliminate this oxidizing agent as a factor in mine explosions are possible and of great importance.

"I know of several cases where gases in sealed areas, when tested with a flame safety lamp as they issued from a valve or from a crack or with a small flow of water, immediately extinguished a lamp and were at first deemed blackdamp but found by additional lamp tests or by chemical analyses to contain enough methane, along with some carbon dioxide and the usual nitrogen, so that when mixed with air a dangerous explosive mixture could be readily formed. Also, if the flame safety lamp has been inserted into an atmosphere almost devoid of oxygen, it may take considerable effort to clear the lamp so that it might be relighted."

Electrical Safety

On Tuesday morning the first part of the session was a series of papers on "Basic Electrical Safety Precautions in Mining," by John F. Conrad, electrical inspector, Pennsylvania De-

partment of Mines, Ebensburg, Pa.; Franklin E. Griffith, Coal Mine Inspection Division, U. S. Bureau of Mines, Pittsburgh, Pa., and C. C. Ballard, master mechanic, New River Company, Mt. Hope, W. Va.

Mr. Conrad's paper, "Safe and Efficient Methods of Sectionalizing Cables in Working Places," first outlined causes of cable destruction, such as acid water, electrolysis, mechanical abuse, and necessary or accidental overload resulting in high temperature which disintegrates the insulation. He noted that any one of these conditions could result in a fire, gas ignition or electrical shock, and also pointed out that the number of temporary splices permitted for safe economical operation should be carefully considered. He further said that sectionalization of trailing cables not only tends to reduce maintenance costs by reducing the amount of cable necessary for efficient operation, but exposes considerably less cable to mechanical injury and heat deterioration. He recommended the following specifications for cable connectors; they should be (1) explosion proof, (2) resistant to acid mine water, (3) designed to be easily and simply connected, (4) designed to accommodate three conductors, (5) streamlined to prevent catching on objects when being pulled over the mine floor, (6) should not contain removable parts that may become lost when making connections or disconnections, (7) should be kept to an absolute minimum weight and (8) should accommodate concentric as well as other types of cable.

"Grounding Electrical Equipment in Working Places," a paper by F. E. Griffith, said that the simplicity of using electric power has brought about a certain degree of carelessness in equipment installation and maintenance and while some abuses do not have any immediate effect, they may eventually lead to explosions, fires, premature ignition of explosives, burns, and electric shock. He stated that while grounding has a definite place in safety work and does offer a means of reducing ignition and shock hazards, it is not a "cure-all" of the many hazards in the use of electricity in coal mines. He then discussed, (a) the purpose of grounding, (b) effective or proper grounding methods, (c) obtaining a low-resistance connection to the main body of earth, (d) the difficulty of obtaining a sufficiently low resistance earth-connection by a rod driven into the mine floor, (e) grounding of the frames of mine machinery by virtue of their contacts with the mine floor, (f) the effectiveness of mine track as a low-resistance grounding electrode, and (g) the determination of a low-resistance earth connection. He especially noted that to prevent dangerous electric-potential differences occurring between the earth and machines that are not track-mounted, a separate conductor should be connected between the frame and a grounding electrode of proven low resistance.

C. C. Ballard's paper "Mapping Electrical Installations Underground," discussed the use of colors in mapping the power circuits and presented mine maps showing arrangements whereby permanent records are easily kept and additions made as the mine advances. He stated that only the principal circuits in the mine, such as D.C. trolley and feeders, telephone lines and A.C. underground pump lines should be shown, and less important items, such as light circuits should be omitted. He felt that some improvements could be made by adding more symbols to represent certain circuits and especially to show the rail returns as these frequently constitute a fire hazard when not properly bonded.

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Job Relations Training

The Tuesday morning session was concluded by a paper, "Job Relations Training for Mine Inspectors and Mine Officials," by L. H. Winger, Supervisor of Employment and Training of the Island Creek Coal Company, Holden, W. Va. In his introduction, Mr. Winger stated: "We are here as representatives of mine inspectors and mine officials in the coal mining industry, to consider plans and methods, techniques and attitudes, spirit and timing of improving relationship between management and worker to the ultimate end that production may continue to increase; that the safety, working conditions and security of the worker may be improved; and a mutually beneficial and constructive condition may exist between stockholder, operator, worker and consumer." The need for training in coal mining was stressed and the methods used by Mr. Winger's department were described.

National Safety Committee

Thomas Moses, General Chairman, Coal Mining Section, National Safety Council, commented on the hazards of top-speed production, our confusion over wages and working conditions, the difficulties in enforcing safety rules because of help shortage, and the overwork of mine inspectors in their duties of inspection and enforcement. He stated that these difficulties must not be increased, and that measures must be taken to overcome them to the best of the ability of the mine inspectors group. He also described the work of the new National Committee, still less than a year old, and the sincere effort being made to aid in every way possible in overcoming the difficulties facing safety programs. He stated that it is the objective of his organization to bring about the adoption in every coal mine in the country a set of rules on which the workmen have placed their stamp of approval and signified their willingness to comply therewith after adoption. He further said:

"This is the first time the industry has been offered a plan to bring all the factors within it into the conference room with only one objective—safety. Its success depends entirely on how well the factors conduct themselves toward each other; how tolerant we are toward each other's viewpoint when difference of opinion arises; and the sincere efforts we put forth to win each other's respect and confidence."

Preventing Roof Falls

On Tuesday afternoon, "Control of Mine Roof in Haulage Ways and Aircourses," was the group title of papers by D. F. Welch, Mining Engineer, Windsor Power House Coal Company,

Pittsburgh, Pa.; James Hyslop, Vice President, Hanna Coal Company, St. Clairsville, Ohio, and Frank G. Smith, General Superintendent, Sunday Creek Coal Company, Columbus, Ohio.

Mr. Welch covered the subject of roof control by air-conditioning, discussing air currents and the disintegrating effect of moisture on certain types of rock, stating the belief that such conditions could be overcome by maintaining proper and constant humidity and temperature at all times. He then described the various features of the water spray plant installed at the Beech Bottom mine of the Windsor Power House Coal Company. At this operation during the four critical summer months of 1942 and 1943 with air-cooling systems in operation, rock falls which had formerly caused a number of accidents and serious time losses along haulage roads and other intake entries, were entirely eliminated.

Mr. Hyslop discussed the control of mine roofs by guniting to eliminate the use of cross bars, with special reference to the No. 8 seam in eastern Ohio, where the top is a serious problem. He stated that in all cases where 1-in. applications of gunite were made after shooting down the slate under the limestone roof and scaling off loose materials, the process was successful on returns and on intake-air entries inby the point where the air reaches and maintains a constant mine temperature. Where temperature changes occur on intake entries outby this point, a 2-in. coating of gunite, reinforced with 4 x 4 No. 8 wire mesh, has proven adequate in most cases. Methods of application, technique of application, crews and equipment, and costs were covered in some detail.

Economic studies indicate that a gunite application is more economical than the installation and maintenance of timbering if the expected life of an entry is more than five years. The seven advantages listed for gunite were: elimination of falls, additional height and visibility, fire-proof surface, satisfactory application of rock dust, cleaner entry, smoother surface for ventilating currents, and decreased maintenance cost.

Mr. Smith discussed the prevention of roof "weathering" by the application of a paint coating, but stated that this technique is still largely experimental and results cannot yet be predicted with any degree of certainty. The only effect of painting is to prevent contacts of air and moisture with the roof rock; paint cannot be asked to do the work of timbering nor can it be expected to have the structural strength of gunite. On the other hand, observations prove that it will prevent weathering. "It is believed that paint will eventually find its place as a relatively inexpensive, effective means of controlling roofs by using it in conjunction with timbering where either method would be ineffective if used alone. In the meantime, it should be used with caution and only after careful study of conditions found in the roof, but on the other hand, this method should not be discarded as impractical because of a few failures."

The Mine Inspector

The final paper of the meeting, "How the Mine Inspector May Help the New Operator," by Thomas Allen, executive director of coal mines, state of Colorado, Denver, stated that the mine inspector is generally a man of long years of practical experience, supplemented by considerable study and that his training, plus detailed information on mining operations in his district, and factors affecting these operations, fits him to be a real adviser to operators whether they are newcomers or have been active for a long time. This special knowledge covers such subjects as: geology, ventilation, drainage, haulage, drilling, blasting, cutting, shearing, loading and mining systems.

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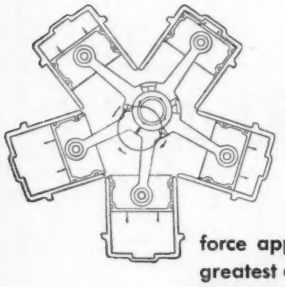
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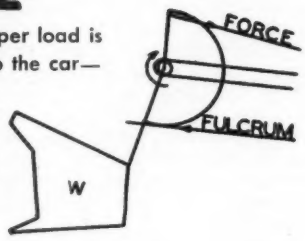


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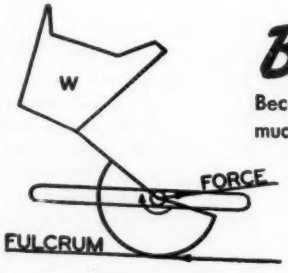
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PERSONALS

Howard I. Young, Deputy Vice Chairman for Metals and Minerals on the War Production Board since January of this year, resigned June 30 to return to his duties as president of American Zinc, Lead & Smelting Co. Mr. Young came to Washington January 1, 1943, to head up WPB's mineral and metal activities. **Philip D. Wilson,** WPB Vice Chairman for Metals and Minerals, has announced the appointment of **James Douglas,** formerly director of the Zinc Division, to succeed Mr. Young. He also has announced consolidation of the Zinc and Tin-Lead Divisions under direction of **Erwin Vogelsang,** who has been director of the latter division.



Howard I. Young



James Douglas

Richard Car has been made mine foreman at the No. 5 mine of the Carbon Fuel Company.

Harry L. Gandy has recently been appointed to the position of assistant to the president of the Elk River Coal & Lumber Company. He is also associated with Buffalo Creek Gauley Railroad Company. Mr. Gandy was formerly secretary of the National Coal Association.

Arthur Swanson has been appointed manager of the Jardine Mining Company at Jardine, Mont. His company recently completed installation of additional milling facilities and now mines and mills 300 tons of ore daily, recovering arsenic trioxide, tungsten and gold.

L. C. Loud has been appointed a state mine inspector with the West Virginia Department of Mines. He was formerly with the Carbon Fuel Company.

Philip R. Bradley, Jr., of Jamestown, Calif., has been reelected president of the Mother Lode Mining Association. **L. A. Norman,** of Sutter Creek, vice president; **Lester Grooms,** Jamestown, secretary-treasurer; **A. F. Ross,** Jackson; **John Burgess,** Sonora, **Charles Segerstrom, Jr.,** Sonora, and **Leon Banks, Pine Grove,** are directors.

James D. Francis, president, Island Creek Coal Co., was recently re-nominated for election as a director of the Chamber of Commerce of the United States, wherein he represents natural resources industries.

Evan Just, associate editor of Engineering and Mining Journal, was recently promoted to the position of editor. Mr. Just holds degrees from Northwestern University and the University of Wisconsin. His experience includes considerable travel in foreign countries and exploration and examination for mining and petroleum companies. As secretary of the Tri-State Zinc and Lead Ore Producers Association, 1937-1942, he made a commendable record on behalf of the Tri-State mining industry, gaining national recognition for his work.



Evan Just

Mr. Just succeeds **Dr. H. C. Parmelee,** editor of Engineering and Mining Journal since 1933, and a member of the McGraw-Hill staff for 34 years. Dr. Parmelee now becomes editor emeritus of E. & M. J.

Edward N. Haas has been appointed Works Manager of the Aurora, Ill., plant of Independent Pneumatic Tool Company succeeding **W. H. Brewer,** who has been named General Factory Manager, it was announced recently by **Neil C. Hurley, Jr.,** President of the Company. **John P. Bank** succeeds Mr. Haas as Assistant Works Manager.

Nathan Beltrand, engineer for the Shattuck-Denn Mining Corporation, has been elected mayor of Bisbee, Ariz.

Byron M. Bird has joined the staff of The Jeffrey Manufacturing Company, Columbus, Ohio, as Technical Consultant on coal preparation and ore dressing matters.

For several years he was Supervising Engineer in charge of the Northwestern Experiment Station of the United States Bureau of Mines at Seattle, Wash. In 1928 he was placed in charge of the Southern Experiment Station of the United States Bureau of Mines at Tuscaloosa, Ala. In 1930 he joined the staff of the Battelle Memorial Institute in Columbus, Ohio, in charge of research in ore dressing and in coal preparation, and has been in charge of this work until he joined Jeffrey.



Mrs. Tom C. Foster, widow of the late Arizona state mine inspector, has been appointed to complete the unexpired term of her husband. She will serve until December 31. Mr. Foster announced his intention to retire from office at the close of the present term because of ill health. Mrs. Foster's first official act was to reappoint all deputies of the office.

P. S. Holden has resigned his position as mine superintendent of the Carbon Fuel Company, and will operate his own mine at Dry Branch, W. Va.

D. C. Ridenour, formerly assistant to the superintendent of Somers mine, Pittsburgh Coal Company, was recently advanced to the position of cost control supervisor in the production engineering department.

Frank Irwin, formerly warehouse manager of the Tamping Bag Co., Mount Vernon, Ill., and a general as-



sistant to President Alfred E. Pickard, is now a lieutenant in the Army Air Force. Lt. Irwin is a first pilot on a B-17, and is reported to be engaged in invasion activities somewhere over France.

Frank M. Correll has retired from his position as mine inspector for the Kentucky operations of Consolidation Coal Company and has been succeeded by **John Hill.**

Dr. Zay Jeffries, noted scientist and a pioneer in tungsten metallurgy and in the development of high-strength aluminum alloys, has been elected to the board of trustees of Battelle Memorial Institute, industrial research



organization. Dr. Jeffries is technical director of the lamp department of General Electric Company, Cleveland, Ohio; and chairman, Carboloy Co., Inc.

Henry F. Hebley, who is director of research for the Pittsburgh Coal Co., has been appointed coordinator for the Pittsburgh district in the nation-wide program for conservation of fuel. Sponsored by the United States Bureau of Mines, the program will invite the aid of numerous experts in many phases of combustion and transmission of heat.

Governor Sidney P. Osborn, of Arizona, is recipient of an old-time miner's candlestick used by the late George Dunn, one used by his father who discovered the rich copper deposits of the Bisbee area. The candlestick is more than 70 years old.

Robert L. Coe, Vice President of Chase Brass & Copper Co., Incorporated, Waterbury, Conn., was re-elected President of the Copper & Brass Research Association at its Twenty-Fourth Annual Meeting held recently at the Hotel Biltmore. Other officers elected were: Vice Presidents, **Wylie Brown**, President of Phelps Dodge Copper Products Corporation, New York; **William M. Goss**, Vice President of Scovill Manufacturing Company, Waterbury, Conn.; **Curtis L. Smith**, Treasurer of the National Copper & Smelting Company; **Herman W. Steinkraus**, President of the Bridgeport Brass Company; Treasurer, **C. Donald Dallas**, President of Revere Copper and Brass, Incorporated, New York; Manager, **T. E. Veltfort**, and Secretary, **B. B. Caddle.**

Henning Marstrander, of the United States Bureau of Mines, has been transferred from the central regional office of the Bureau to the eastern region for special work in the Appalachian coal fields. He will investigate field problems involved in the development of coal lands, and will supervise drilling, trenching and sampling. His headquarters will be at College Park, Md.

— *Obituaries* —

Tom C. Foster, 75, veteran mine inspector, serving his twenty-second year as Arizona's state mine inspector, died in Phoenix, May 25. Born at Scranton, Pa., he spent his entire lifetime in the mining industry, growing up in Leadville, Colo., where he began as a mucker at 15.

David F. Faust, 88, formerly general manager of the United Pocahontas Coal Company at Crumpler, died recently at his home in Shamokin, Pa. He was engineer and superintendent for the Philadelphia and Reading Coal and Iron Company for many years.

Alfred Sword, 76, employed by the Lehigh Valley Coal Company for 58 years, for which he was chief coal inspector, died April 9 at his home in Wyoming, Pa.

L. C. Skeen, 51, vice president and general manager of the Eastern Coal Corporation, Pike County, Ky., died April 11 in Huntington, W. Va.

Harradon S. Smith, 77, formerly consulting engineer for the Lehigh Valley Coal Company and later for the Buffalo, Rochester and Pittsburgh Coal Company, died April 9 at his home in Forty Fort, Pa.

Brooks F. Williams, 78, prominent business man, coal operator and former mayor of Welch, W. Va., died June 17. Mr. Williams was identified with the early development of the soft coal fields, was a director of the Crystal Block Coal Company, and managed the coal properties of several companies' estates in this section.

Joseph M. Garris, 72, manager of the cable sling division of the Macwhyte Company, died May 25 at Kenosha, Wis.

Colonel Warren R. Roberts, well-known Chicago engineer and founder of Roberts & Schaefer Co., died June 22 in Miami, Fla. He was connected with early Chicago engineering structures such as river bridges, Chicago's first skyscraper, portions of the elevated system and early reinforced con-



crete structures. In 1904 he organized Roberts & Schaefer Co., specializing in structures for the handling and treatment of coal. Operations were later expanded to include structures for the servicing of railroad locomotives and special structural adaptations of reinforced concrete.

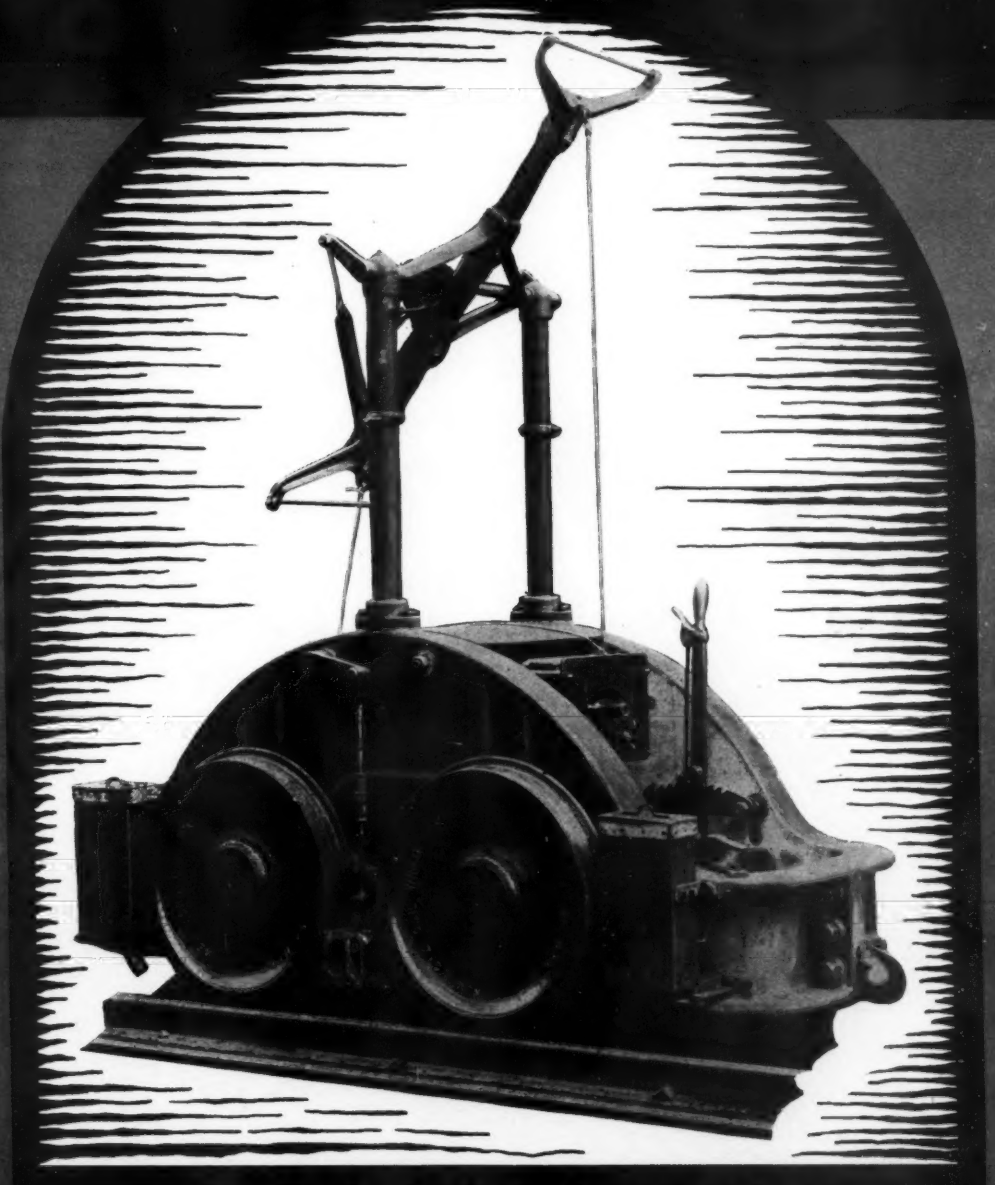
During World War I Colonel Roberts was attached to the Construction Division of the Quartermaster Corps. He was a member of: Am. Soc. C. E., A. I. M. E., and Am. Mining Congress.

Gerret A. Bigelow, 72, died in San Francisco, Calif., May 2, 1944. He was for 30 years chief of field exploration work for the Yuba Consolidated Gold Fields, Ltd., and had been engaged in mining for many years in Mexico, British Columbia, Alaska and China.

Jules A. Endweiss, 61, controller of the Kennecott Copper Corporation, died April 20 at Saranac Lake, N. J. He joined the Kennecott Copper Corporation after residing for 30 years in Mexico, where he was engaged in mining activities.

JEFFREY

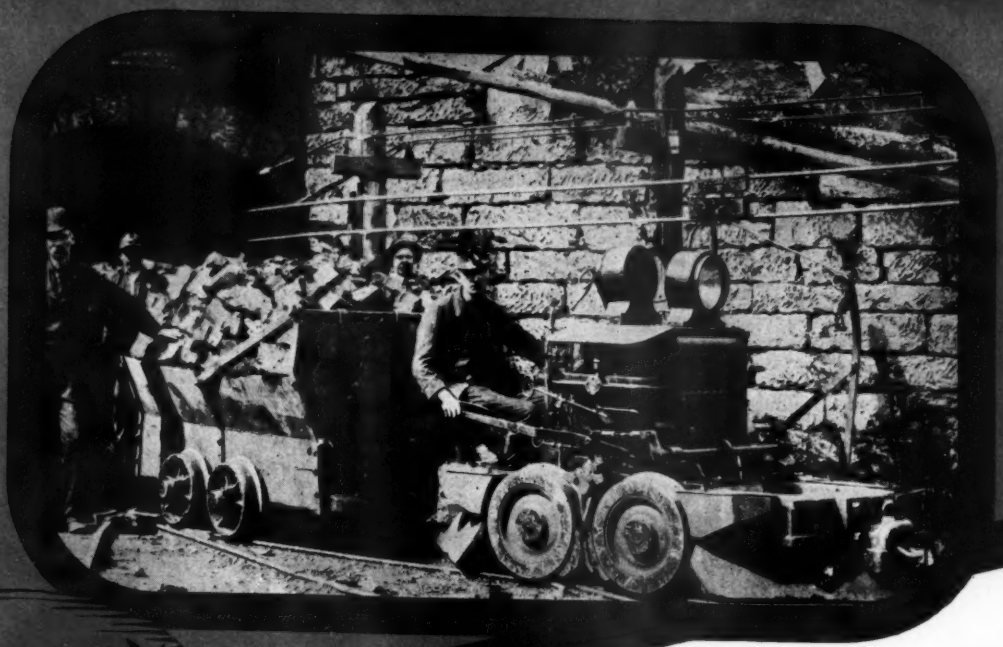
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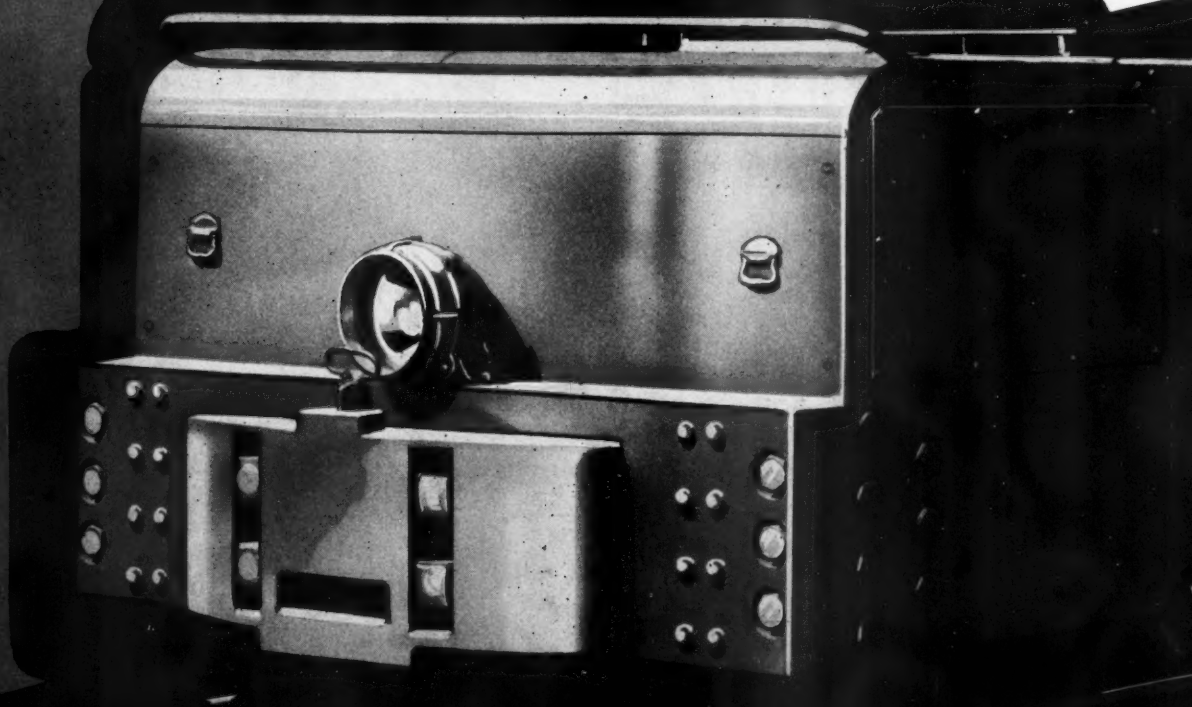




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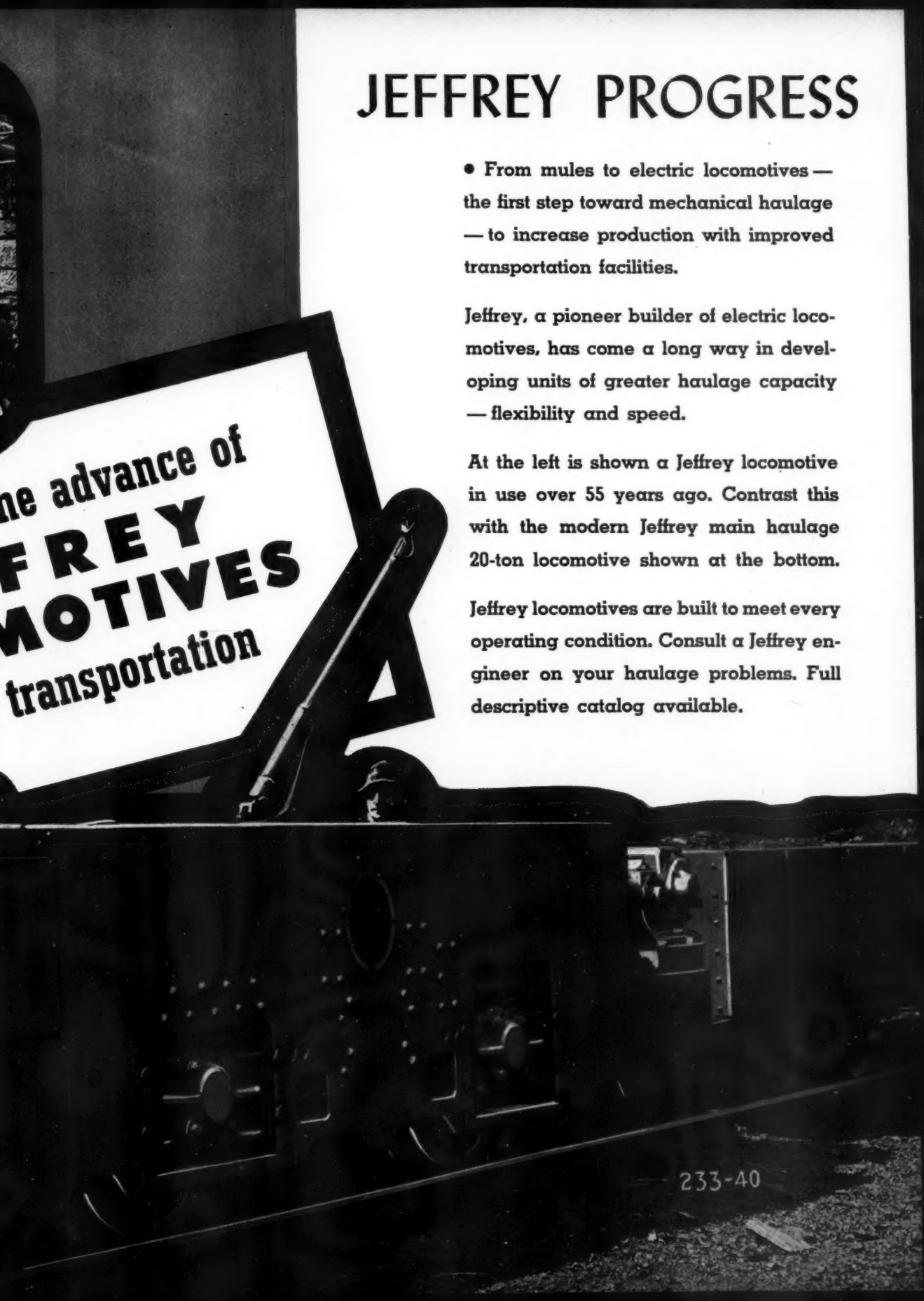
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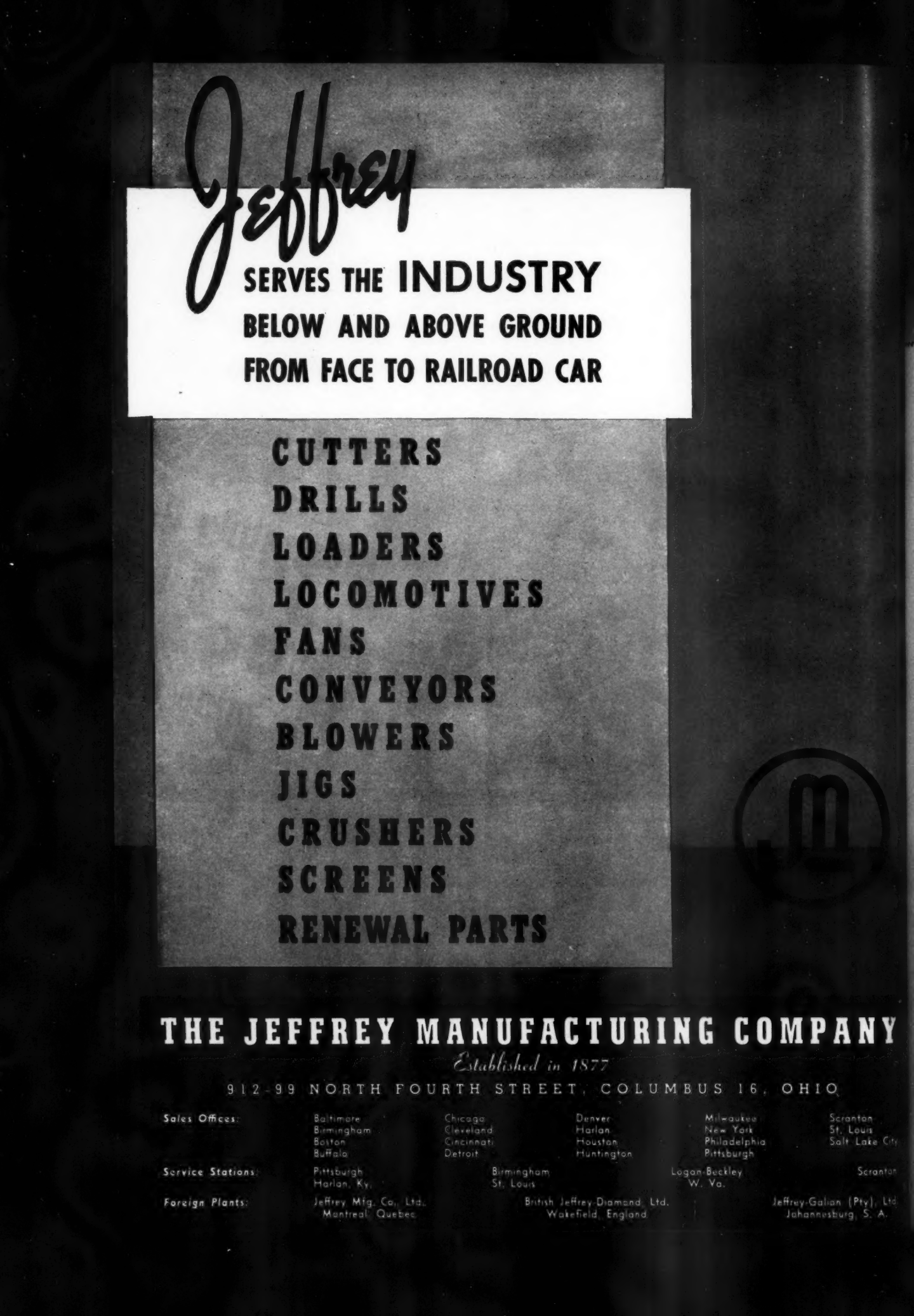
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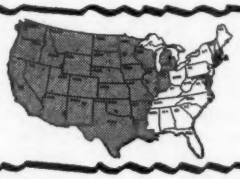



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News and Views

Eastern States



WEST VIRGINIA

»»» The Supreme Court of West Virginia recently reversed a decision of the Workmen's Compensation Appeal Board which had awarded an employe $10,000 for an accident which occurred November 11, 1925. In reversing the Appeal Board, the Court instructed the State Commissioner to close the case.

»»» Recently Wm. Blizzard, vice president of District 17, U. M. W. A., declared that absenteeism was not retarding the production of coal in southern West Virginia. As a matter of fact, in Kanawha district only, the lost tonnage is approximately 2,500,000 tons for the period of October, 1943, to May, 1944, inclusive, with a monthly absentee record for April amounting to 22.5 percent.

»»» Twenty-one hundred acres of the Freeport coal tract in the Clinton district of Monongahela County was recently purchased by the National Steel Company of Cleveland. This increases the company's holdings to about 6,000 acres in the area. The property was purchased from T. D. Stewart, of Morgantown; J. S. Scully, of Winchester, Va.; J. E. Long, of Morgantown, and others for a price said to be about $262,500.

»»» Calvin Verity, vice president and general manager of the American Rolling Mill Company, recently presented the company's distinguished service medal to five men who made heroic efforts to save the lives of fellow workers trapped by a mine explosion at Nellis last November 6. Presentations were made in the Nellis theater after a reception and dinner in the company clubhouse. Those honored were A. E. Oakley, superintendent of the mine; L. D. Baldwin, section foreman; Austin Woodruff, now section foreman at Armco's Montcoal mine; Clyde Holstein, electrician; and Dr. Paul Aliff, company physician. Mr. Verity, whose father, George M. Verity, established the award in 1925, pointed out that in the past 19 years only 17 other employes have received the solid bronze medal and that the award was made only after "careful investigation and discussion." Speakers at the presentation included State Mine Chief Jesse Redyard, company officials from various Ohio, Pennsylvania and Kentucky communities, and Dr. Harry Kennedy, representing the Kanawha Operators Association.

»»» The Kelley's Creek Colliery Company has begun operations at its new mine at Hugheston. The company is reported to have been running coal since the first of May, with lack of manpower the only retarding influence. The coal is mined from the No. 2 Gas Seam and is in great demand by the Government for wartime fuel. The company officials have made plans to develop the mine into one of the most modern in the Kanawha Valley, employing a crew of more than 500 miners. Installations will include a modern tipple for both railroad and river loading and modern bath house facilities for miners. The company also operates three mines at Ward and others in the northern part of the state.

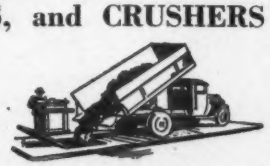
»»» W. M. Given, Jr., assistant manpower director, has announced that the state management-labor committee is performing an all-out effort in its intensification of the coal miners recruitment program. "Despite West Virginia's classification as a labor-surplus state, a critical manpower shortage now exists in the mining and lumber industries," Mr. Given has reported.

Recruiting plans for the miners include an intensified publicity campaign with sound-truck movies operating at various mining communities. Letters have been written to men formerly employed in the mines urging them to return to their coal jobs. Release from employment elsewhere will be provided any former miner who desires to return to his old job.

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PENNSYLVANIA

»»» L. S. Horne, superintendent of Banning No. 1 mine of the Pittsburgh Coal Company, recently announced the inside and outside winners of safety awards for the month of May, also the winners of the awards for the quarter ending May 31. For the inside monthly award, one $10 winner and four $5 winners were announced and for the outside awards three $5 winners were announced. One $25 winner, one $20 winner, three $10 winners and nine $5 winners were announced for the inside quarterly awards. One $10, and three $5 winners were announced for the outside quarterly awards.

»»» The recent report of the Federal Reserve Bank of Philadelphia shows that industrial production during the first four months of 1944 was 3 percent above the same period of 1943 in the Third Federal Reserve District. Anthracite and bituminous coal production through April was larger than the first four months of last year, but the report discloses that small reserves and the prospect of a continuing loss of manpower suggests further tightening of the supply situation in coming months. Stockpiles of industrial coal are still under what is considered a minimum reserve of of 30 days' supply.

»»» Dr. A. H. Stewart, state health secretary and board chairman, recently explained that the "impression that the orders banning the dumping of coal mine silt in Pennsylvania streams apply only to the Schuylkill River" is a misunderstanding. He added that his remarks were directed especially to the smaller coal companies in all coal mining regions and emphasized that the order applies to wet preparation plants in the bituminous fields as well as to collieries in all four anthracite areas.

»»» Some 350 mine workers recently took examinations for operating as mine foremen and electricians at Johnstown, Barnesboro, Windber and Indiana. The total number of applicants, however, was smaller this year than in former years, because a number of men have entered the armed forces. The largest number of applications was for first-grade foremen in all except the Windber area, where examinations for second-grade foremen were more numerous. About 20 men took the examination for mine electrician. Applicants for classification as fire bosses took their tests on the second day of the examinations.

»»» The Johnstown Flood-Free Observance Committee has been dissolved and the board of trustees is establishing a clearing house for suggestions for the good of the community, according to recent reports. The first responsibility of the new assignment will be to maintain the favorable publicity which the city received during the period that the committee sponsored numerous events to mark the completion of the $8,670,000 river channel improvement program for the city. It is said that articles regarding the flood control at Johnstown had appeared in more than 700 publications in practically every state, reaching a total of at least 35,000,000 readers. Continued cooperation and assistance to the 400-odd Johnstown residents who assisted in the work of the committee has been asked and fitting tribute has been paid to the work of H. Lee Wilson, city engineer, who cooperated with the United States Army engineers during the channel improvement work.

»»» The Oregon slope mine of the Morgan Coal Company at Pittston, Luzerne County, Pa., won the anthracite group trophy "Sentinels of Safety" award in the 1943 competition of the United States Bureau of Mines. Employes at this operation worked 49,742 man-hours and had only one lost-time accident, causing nine days of disability. The accident severity rate was extremely low, only 0.18.

Four other Pennsylvania anthracite mines were winners of certificates of honorable mention for outstanding safety records: Midvalley mine, Columbia, Hazle Brook Coal Company; Reliance mine, Mt. Carmel, The Philadelphia and Reading Coal & Iron Company; Eckley mine, Eckley, Jeddo-Highland Coal Company; No. 14 mine,

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Pennsylvania bituminous coal mines receiving certificates of honorable mention were: Apple No. 2, Glasgow, Apple Coal Company; Rockhill No. 1, Robertsdale, Rockhill Coal Company.

The Wampum limestone mine, Wampum, Medusa Portland Cement Company, and the Tomhicken anthracite mine, an open-cut operation at Tomhicken, Luzerne County, operated by the Haddock Mining Company, operated during 1943 without a disabling injury. The Bureau of Mines lists 12 quarries in Pennsylvania, which also operated during the year without a disabling injury.

»»» W. O. Arzinger Machinery Co., Birmingham, Ala., has opened an office and laboratory at 25 South Gallatin Ave., Uniontown, Pa., and has installed a pilot washing unit to handle 0 x ¾-in. material for the beneficiation of coals from stripping operations, mine gob or mine run coal, also for the separation of coke from old Beehive Breeze dumps, salvage of anthracite from old banks, etc.

Mr. Arzinger is now giving attention to the installation of several washing units in the Pennsylvania coal fields.

OHIO

»»» Ford Sampson, commissioner for the Ohio Coal Association, estimates that approximately $900,000 will be paid Eastern Ohio coal miners in special allotments during June and July. The amount covers portal-to-portal and vacation pay, in Belmont, Harrison and Jefferson Counties, and is on the basis of 10,000 men sharing in the division of funds. Payments on the back allotments of portal-to-portal pay began recently and will continue at $5 each payday until the $40 has been put into the pay envelope. Vacation pay will be distributed at the rate of $50 for each man and will alone account for half a million dollars coming to Eastern Ohio coal miners.

»»» E. L. Keenan, Ohio WMC director in Columbus, recently cleared the way for the return to Eastern Ohio counties of qualified miners who have in the past year or so, migrated to industrial centers such as Akron, Detroit, Cleveland, Canton and Columbus. The change may be made without the miners becoming involved in a lengthy discussion as to the merit of their cases when they apply for certificates of availability at the field offices of the United States Employment Service in other parts of Ohio or other states. Keenan's instructions were in reply to an inquiry of the Ohio Coal for Victory Committee regarding prompt handling by WMC and USES of miners wanting to return to their former jobs. The Ohio Coal for Victory Committee is now in the midst of a program to recruit 2,000 more coal miners for Eastern Ohio.

»»» The Irish Rock mine, Gaysport, Muskingum County, operated by the Irish Rock Coal Company, received the certificate of honorable mention for outstanding safety records in the 19th annual "Sentinels of Safety" competition of the United States Bureau of Mines. The Irish Rock mine was one of four receiving similar awards for bituminous coal mines in a nationwide competition which involved 389 mines and quarries in 37 states.

MARYLAND

»»» The Maryland-Union No. 1 mine, Mt. Savage, Allegheny County, Md., operated by the Maryland-Union Coal Corporation, was the winner of a certificate of honorable mention for outstanding safety records in the "Sentinels of Safety" competition of the United States Bureau of Mines. Although first-place positions are limited to six mines and quarries in this competition, many other operations had outstanding safety records during 1943 and have therefore been given certificates of honorable mention in this nationwide competition. Only operations with 30,000 or more man-hours exposure are eligible for the honorable mention award, although the Bureau of Mines points out that many mines and quarries with fewer man-hours are entered in the competition because of their extreme interest in preventing injuries to workers. The Union Bridge limestone and shale quarry, Frederick County, Md., near Union Bridge, Carroll County, Md., operated by the Lehigh Portland Cement Company, operated all during 1943 without a disabling injury.

WANTED: Two Coal Loading Booms with operating motors by Illinois Mining Company for immediate purchase. Reply Box No. "C," Mining Congress Journal, 309 Munsey Bldg., Washington 4, D. C.

VIRGINIA

»»» The No. 6 gypsum mine of the the United States Gypsum Company at Plasterco, Washington County, Va., was named the winner of the nonmetal group trophy "Sentinels of Safety" award in the 1943 competition of the United States Bureau of Mines. Employes of this operation worked 223,574 man-hours



Entry development with track-mounted cutting, shearing and loading machines—track is laid on manufactured steel-and-wood ties

without a lost-time accident. Dr. R. R. Sayers, director of the United States Bureau of Mines, in announcing the winners, stated that 389 mines and quarries in 37 states competed, and that 85 had accident-free records during the year. The trophies donated each year in the national safety competition by the *Explosives Magazine*, are given first-place winners of underground bituminous coal mines, underground anthracite mines of Pennsylvania, underground metal mines, underground non-metallic mineral mines, open-cut operations of all types and stone quarries.

ALABAMA

»»» The Tennessee Coal, Iron and Railroad Co., recently presented long-term employes with service awards. Among them were 13 who have records of 35 years and over:

James M. Riley, Sr., Fairfield Steel Works, 45 years; Thomas P. Gwillim, Fairfield Steel Works, 40 years; J. A. Harvell, Ensley Works, 40 years; Ben Lorino, Ensley Works, 40 years; George S. Sherman, Ensley Works, 40 years; O. F. Stafford, Ensley Works, 40 years; William H. Gilbert, Fairfield Sheet Mill, 40 years; John H. Harris, Rail Transportation, 40 years; Joe Puccio, Ensley Works, 35 years; F. C. Buck, General Office, 35 years; Minot E. Towers, Ishkooda Mines, 35 years; E. P. Roden, Rail Transportation, 35 years; Andrew J. Roddy, Rail Transportation, 35 years.

»»» The 20,000-ton Detinning Plant located in the suburbs of Birmingham is now in regular operation to recover tin and scrap steel from tin cans. This plant uses the alkali process in recovering the tin and producing tin oxide. The tin recovered goes for the most part to the shipbuilding industry. The salvaged cans processed at the plant, yield 90 percent steel, which is hydraulically baled and then sold to local concerns for melting scrap.

NORTH CAROLINA

»»» Drillers working in the old Cranberry iron field under direction of the U. S. Bureau of Mines have struck a 30-foot magnetic iron ore zone, it has been announced by L. Dahner, engineer in charge of the operation.

The ore zone containing magnetite was encountered at "Hole 2-A" which is "turning out surprisingly well," to quote Dahner. Previously, "Hole 2-A" had been described by engineers as the "key hole" of the drilling operations which were started in November.

The exploratory drilling is one of a number authorized under federal supervision from a special appropriation made by Congress. They were inaugurated following a survey of the state's minerals by H. A. Brassert Associates of New York.

»»» With exploratory drilling resumed in the Deep River coal fields, members of the drilling crew report they have struck a wide band of carbonaceous shale. The Department of Conservation and Development has explained that the shale usually accompanies the coal vein itself.

Drilling had been halted some time ago when the drill head was lost. Probings have now reached below the 1,400-ft. level, and for the last 200 ft. have proceeded through the shale. The Cumnock deposits are comprised of an upper vein of coal 42 in. deep, a middle "black band" 18 in. deep, and a lower vein of coal 18 in. deep. The drilling is under supervision of the U. S. Bureau of Mines.



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Central States



MICHIGAN

»»» The Inland Steel Company of Ishpeming recently completed the modernization of the machine shop and blacksmith shop at the Morris iron mine. Individual motor drives now replace belt drives for lathes and other machinery. Another improvement is the fluorescent overhead lighting units which have been installed.

»»» The East Vulcan mine of the Penn Iron Mining Company, Vulcan, Mich., won the metal-mine group trophy "Sentinels of Safety" award of the Bureau of Mines for 1943. Employes of this mine worked 525,113 man-hours without a lost-time accident. The Alpena limestone quarry, operated by the Wyandotte Chemicals Corporation, won the quarry trophy. Employes of this operation worked 408,784 man-hours without a lost-time accident.

Certificates of honorable mention were received by the Wauseca iron ore mine, Iron River, Mich., operated by the M. A. Hanna Company and by the Richmond mine at Palmer, also operated by the M. A. Hanna Company. The Volunteer iron mine at Palmer operated during 1943 without a disabling injury.

WISCONSIN

»»» Completion of the Cary mine bore hole at Hurley on May 12 has been reported. The 5½-ft. diameter bore hole, started in August, 1942, by J. B. Newsom for Pickands, Mather & Company, was drilled to a depth of 2,500 ft. Nearly 100 ft. of raising from the 31st level was done to meet the bottom of the bore hole and to prepare a rock chute to receive the muck from the stripping down of the bore hole to its future rectangular shape. The Cary bore hole is the deepest of its kind so far put down. It is located in the granite footwall.

It is also reported that the new surface plant for this shaft is near completion. The hoist to be installed will be driven by a 1,000-h.p. Westinghouse motor. It is a new double-drum Nordberg geared hoist with 1⅝-in. hoisting cable handling 8-ton capacity skips. A 600-h.p. Sullivan air compressor is also being assembled in the new engine house. Power for the new installation comes from the Gogebic Range power system of the Lake Superior District Power Company furnishing power at 33,000 volts. The mine substation will have a bank of 1,250 k.v.a. General Electric Company transformers and a Westinghouse steel enclosed switchboard will operate air circuit breakers at 2,200 volts.

INDIANA

»»» A premium of 15 cents a net ton for rail-shipped bituminous coal produced from handloading underground mines in Indiana has been extended an additional two months to August 1, 1944, by the Office of Price Administration.

A differential over other mines in Indiana (Coal District 11) was originally allowed these high cost producers November 29, 1943, to assure their continued production. The premium was to have expired by June 1, 1944, a date by which representatives of handloading underground mines stated they would present data from which OPA could decide whether the 15-cent-higher level of prices was to be retained by them.

Although the industry committee has been preparing data, the information has not yet been presented to OPA. That agency is now allowing 60 days for the presentation of the information and action on it by OPA.

MINNESOTA

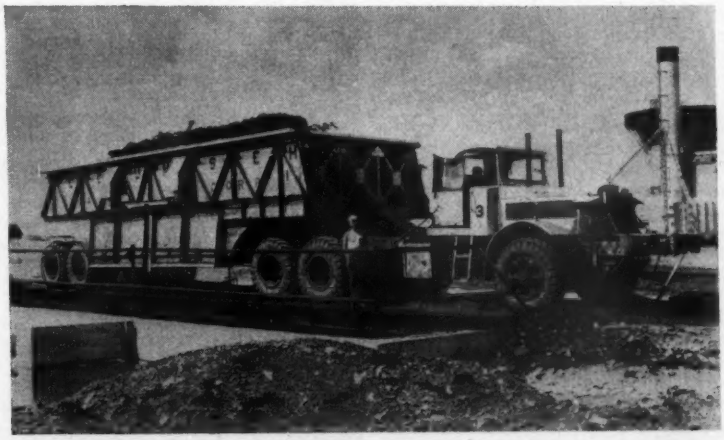
»»» Walter L. Maxson, manager and chief engineer of the mining division of Allis-Chalmers Manufacturing Co., Milwaukee, has been named director of research for the Oliver Iron Mining Company, U. S. Steel Corporation subsidiary, according to an announcement by LeRoy Salsich, president.

Plans for the establishment of a new iron ore research laboratory to centralize research activities of the Oliver Iron Mining Company were made known recently when the mining company acquired a modern four-story building in Duluth.

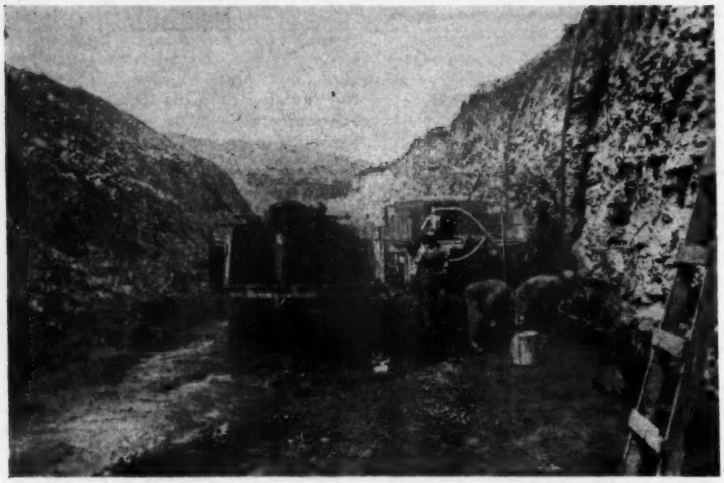
Mr. Maxson joined Allis-Chalmers as engineer in the mining department in 1927 and later advanced to chief engineer, then manager, mining division, including supervision of engineering and research. At the time of his association with Allis-Chalmers, he inaugurated a program of mineral research which has continued under his supervision. This work included fundamental research in crushing, grinding and treatment of raw materials and by-products.

In establishing the new research facilities in Duluth, the Oliver company will be enabled to continue and intensify its pioneering program of research in the general improvement of Lake Superior district iron ores used by steel making subsidiaries of the United States Steel Corporation.

The company has been carrying on for many years, a program designed to study ways and means of improving iron ores currently being mined and to make experimental investigations of the concentration of lower grade iron ore formations for future use. In addition, United States



The Tecumseh Coal Corp. of Southern Indiana uses a 50-ton payload Mack tractor trailer combination. The empty tractor trailer combination weighs 40 tons, making a total of 90 tons when loaded. A 6-yd. shovel is used in loading



Hand loading coal at a small stripping operation in Jasper County, Mo. Overburden, 15 ft.; coal, 14 in. Stripped by 1-yd. shovel

Steel's research department has conducted a long-range program of experiments with a view toward conservation of natural resources through greater use of lower grade iron ore.

»»» Honored for outstanding records in preventing accidents, six mines and quarries in the United States were recently named winners in the 19th annual "Sentinels of Safety" competition of the United States Bureau of Mines. Winner for the trophy for open-cut mines was the Danube iron ore mine of Pickands, Mather & Co. (Balkan Mining Company) at Bovey, Itasca County, Minn. Employes of this mine worked 435,099 man-hours without a lost-time accident. Five other Minnesota open-cut mines operated during 1943 without a disabling injury. These were: the Corsica at Elcor, the Biwabik at Biwabik, the Majorca at Calumet, the Dunwoody at Chisholm, all Pickands, Mather and Company operations, and the Erie iron ore mine, Hibbing, Minn., operated by the Erie Mining Co. A certificate of honorable mention was given the Susquehanna mine at Hibbing, operated by Republic Steel Corporation.

TRI-STATE

»»» A large blast recently shot off at the open-pit zinc mine of the Oronogo Mutual Mining Company at Oronogo, is believed to have broken some 80,000 to 100,000 tons of zinc-lead ore. Two large pillars were blasted in the lower workings of the mine in the southeast corner.

Guy H. Waring, manager of the company, has also stated that pouring of concrete for a large underground bulkhead, designed to hold off the inflow of water from the south Oronogo and North Webb City underground workings is now nearing completion. This underground dam is located about 175 ft. south of the old Mutual No. 5 shaft and is about 200 ft. in length from wall to wall. It is 12 ft. thick and varies from 14 to 16 ft. in height, tied into a row of pillars and wedged into solid rock in the sides, floors and ceiling, all of which is reinforced with mine rails and drill steel, both vertically and horizontally. With the addition of several bulkheads, inflow of water underground from the old Webb City mining field to the south is expected to decrease the expensive pumping operations now being carried on in the Oronogo bottoms by the Eagle Picher Mining and Smelting Company.

ARKANSAS

»»» The Consolidated Bauxite mine, Bauxite, Saline County, Ark., operated by the American Cyanamid & Chemical Corporation, received a certificate of honorable mention for its outstanding safety record in the 19th annual "Sentinels of Safety" competition of the Bureau of Mines. This mine was one of four underground metal mines to receive this award, all the others in the group being iron mines in the Lake Superior district.

SOUTH DAKOTA

»»» The Homestake Mining Company will be well prepared to again assume its important role in the country's gold production when resumption of operation is again allowed. The Ross and Yates shafts, each 5,000 ft. deep, are capable of handling large tonnages of daily production. A 3,000-h.p. electric hoist at the Yates shaft handles 9-ton skips and at the hoisting speed for which it is designed, will produce about 4,000 tons per day. Hoisting time is said to be 2½ minutes. The cylindro-conical hoists used have a 25-ft. diameter at the large end and a 12-ft. diameter at the small end.

The Yates shaft is a 15-ft. x 27-ft. 8-in. shaft with seven compartments; the man hoist alone is designed to carry a 7,000-lb. load. The headframe is 152 ft. high, with sheaves placed 125 ft. above the collar. A push-button elevator in the headframe insures more frequent adequate sheave wheel and super structure inspection and maintenance.

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LAKE SUPERIOR MINE SAFETY CONFERENCE

Iron Mining Men Hold Twenty-first Annual Meeting at Duluth. Viewpoints Presented Indicate Constantly Improving Health and Safety Programs

A RECORD attendance of over 600 delegates marked the 1944 annual safety conference of the Lake Superior Iron Mining Section of the National Safety Council at the Hotel Duluth, June 22-23. General Chairman E. A. Anundsen, safety supervisor, Pickands, Mather & Co., Duluth, and his committee presented an interesting and timely program involving many new phases of the safety problem now rising in importance. The group was welcomed to the city and lauded for its excellent work by Edward H. Hatch, mayor.

"Management's Viewpoint," a paper by Earl E. Hunner, general manager, M. A. Hanna Co., Duluth, praised the tremendous war effort put forth by the Lake Superior District miners in producing 320,000,000 tons of iron ore during the four years 1940-43. He pointed to the direct challenge now before every man in the industry, be he laborer or boss, to meet the 1944 demand successfully. "This is no time for petty misunderstandings between men and bosses, but a time when both should keep in mind the main issue of the day: the shortening of the war and the saving thereby of thousands of men's lives; and with this thought in mind, we should all give full cooperation to each other in making each day one of maximum production with a minimum of accidents."

He called attention to the increased responsibility of supervisors and safety engineers. Increased production plus a high rate of labor turnover has greatly stepped up the need for accident preventive measures. The rise of accident frequency and severity during the war years, in the district, was laid directly to these causes. The speaker also brought out the fact that the "worried workman" constitutes a genuine safety hazard and advised supervisors to take a kindly attitude in all such cases and aid in removing the worry if possible. Noting that in the United States as a whole one fatality occurs for every 100 lost-time accidents, he warned against that "chesty feeling" of overconfidence an operator sometimes gets when all his accidents are classed as "trivial."

Oscar A. Dingman, professor of mining engineering, Montana School of Mines, spoke interestingly on "A Working Plan for Training Miners." He discussed the Anaconda Training Plan (now dropped for lack of recruits) and gave emphasis to the fact that definite training programs have proven beneficial, especially in the matter of better accident records. New men, trained under the program, were not only setting up good production records but were also reported about "twice as safe" as other miners from the injury standpoint.

The training plan features a new order in that it prepares miners as "specialists" for certain jobs instead of attempting to make all-around miners, as was done in the old days of father-to-son training. The speaker felt that this new manner of approach had brought about many desirable results.

Statistics on mine accident trends in various types of operation were presented by Reuben D. Larsen, safety engineer, M. A. Hanna Co., Iron River, Mich., in a paper, "Review of Accidents in the Lake Superior District Iron Mines During the Year 1943." Reports from 25 iron mining companies in the district showed that the ranking on a severity basis for 1943 was: (1) General shops, (2) top slicing, (3) open pits, quarries and concentrating plants, (4) sub-level caving, (5) stoping. Stoping severity rates increased over 1942 while all others decreased. Frequency data show increases in accident rates for all units of operation.

Mr. Larsen noted the general improvement in severity ratings and asked for an uncompromising determination to bring about even greater improvement, based upon fundamentals proven sound through long experience.

"Ventilation at the Newport Mine," by H. L. Schieber, superintendent, Pickands, Mather & Co., Ironwood, Mich., offered an excellent analysis of a complex ventilation problem involved in multiple-level mining and showed how adequate ventilation methods enter importantly into the problems of production as well as safety. During certain portions of the operation, positive control arrangements are necessary. Mr. Schieber's paper described and illustrated the reversing mechanisms employed to accomplish this and brought out the needs and advantages of such controls in a variety of situations.



New officers, Lake Superior Section, National Safety Council. Left to right: E. W. R. Butcher, treasurer; H. F. Stewart, vice chairman; W. T. McCormick, chairman; F. E. Cash, secretary

Dr. Leroy U. Gardner, director, Saranac Laboratory, Saranac Lake, N. Y., in an instructive paper, "Dust Reaction and Its Control," described the fundamental nature of silicosis. He presented slides to show the development of silicosis in test animals, the harmless effects of many dusts and the seriousness of tuberculosis in a patient suffering from silicosis. He illustrated the time factor in silicosis progress and pointed to the desirability of X-ray examination as an indicator in preventing advanced development of silicosis and other lung ailments.

Electrical hazards in open-cut mines were discussed by Paul L. Bush, elec-

trical engineer, Inter State Iron Co., Calumet, Minn. Mr. Bush drew numerous illustrations from his personal experiences and referred especially to good electrical grounding as the most important means available in eliminating electrical hazards. Competent instruction and supervision were also stressed.

"Safety in Open Pit Mining," by C. E. Shea, district safety supervisor, Hibbing-Chisholm District, Oliver Iron Mining Co., gave the conference an excellent summary of the problems common to this type of mining. Proper signaling, visibility and supervision around shovels and locomotives can prevent such accidents as shovel dipper striking cars or locomotive, shovel backing up blindly and catching some one, shovel oiler hit on swing or backup, etc. The clear-cut safety rules of this type of operation, though well established through sad experiences, are still violated. The stress of the times seems to the workmen to call for such chance-taking as working against overly high banks, "hopping" trains in motion, carrying the shovel-clutches ahead instead of behind, etc. Accidents from such causes are preventable if men and supervisors are determined that they shall not happen.

C. W. Allen, assistant manager, Cleveland Cliffs Iron Co., Ishpeming, Mich., described "Safety Practices Used in Sinking the Mather Shaft." Many of the procedures used in sinking this 2,352-ft. shaft were dictated by the requirements of safety. The sinking operation of this fireproof, steel and concrete lined shaft utilized specially constructed drill headers, sinking platform and cage (which could be dropped well below the lowest steel set on rope guides), mucking tray and numerous other devices which held accidents to virtually zero. In advancing through slabbing ground, 20-ft. tamarack forepoles were used. Blasting practice called for 74-hole rounds with V-cuts and 3 burn holes. Eighty to 90 percent gelatin dynamite was used to insure fine breakage and air-water sprays were employed to thoroughly absorb and dispense fumes. Delay blasting caps, substituted for no-delays, were credited for reducing the number of misfires. Two-way ventilation provided in the shaft compartments enabled smoke to reach surface in a few minutes.

A final "panel" discussion, "Fundamental Causes of Accidents," was led by J. H. Mulcahy, supervisor, industrial relations, Republic Steel Corp., Duluth, Minn. General Chairman Anundsen in introducing the panel stated the objective: If a man suffers an eye injury because he failed to wear his goggles the answer is usually deeper than at first appears. We can't simply say he was careless—and forget about it. Such analysis gets us nowhere. There must be a reason—perhaps the goggles were uncomfortable, or needed optical correction, or fogged easily, or maybe the man was one to "take a chance." We simply can't get down too far into the basic reasons for accidents. The farther we go here, the more we will reduce those accidents that are hard to prevent.

Under such a theme, the group discussed and analyzed several recent accidents. Taking part in the panel were: Chairman J. H. Mulcahy, supervisor, industrial relations, Republic Steel Corp., Duluth, Minn.; participants: Dr. L. W. Johnsruud, Mesaba Clinic, Hibbing, Minn.; H. J. Gemuenden, training director, Montreal Mining Co., Montreal, Wis.; A. W. Heitman, superintendent, Inland Lime & Stone Co., Manistique, Mich.; H. F. Stewart, safety engineer, Butler Bros., Cooley, Minn.

At the conclusion of the session the following officers were announced for the ensuing year: Chairman, W. T. McCormack, Inland Steel Co.; vice chairman, H. F. Stewart, Butler Bros.; secretary, Frank E. Cash, U. S. Bureau of Mines; treasurer, E. W. R. Butcher, Republic Steel Corp.

In keeping with established custom, numerous exhibitors placed new safety equipment on display and models of locally developed safety devices were shown by several mine operating companies.

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COLORADO

»»» The Lu Ev Mining Company is reporting production in its property known as the Powers mine, Gilpin County, near Central City. Values are in gold, silver and copper. The most recent development includes work in the deepening of the main shaft, in which five men are employed. The company is a partnership composed of J. G. McGrath of Idaho Springs and J. C. Thomas, Jr., of Central City.

»»» Lead-zinc production in the Kokomo Kimberly Mines, Inc., since January, 1944, amounted to approximately 800,000 lbs. of zinc and 35,000 lbs. of lead besides the production of gold and silver contained in the lead-zinc ore. It is said that very large ore reserves have been developed. The company took over the Kimberly group of mining claims in the summer of 1943, reconditioned and opened up the crosscut tunnel for 1,800 ft. and did a great deal of development work, installing electric equipment throughout. The crude ore is being shipped to the Golden Cycle mill in Colorado Springs, with production between 1,000 and 1,500 tons a month. As soon as miners can be secured this tonnage will be greatly increased. The Kokomo is the center of a sedimentary ore belt surrounded by the Leadville, Climax, Gilman, Breckenridge and Alma districts, all great ore producers.

»»» The Colorado Zinc Company is reported to have leased property at Crystal and is said to have engineers and several laborers on the job to produce zinc to meet government demands. The company is said to have leased the Sheep Mountain claim, the Lead King, the Black Queen and the Lucky Boy and expects to work from 15 to 30 men throughout the summer.

WYOMING

»»» The D mine of the Union Pacific Coal Company at Superior, Sweetwater County, received the 19th annual "Sentinels of Safety" award which brings it top honors in the bituminous coal mine group. Employes at this operation worked 307,529 man-hours and maintained an unblemished record regarding lost-time injuries. Five other mines and quarries in the United States were also named winners of this award in their respective classifications. The annual contest, inaugurated by the Bureau of Mines in 1925 to promote safety in mines and quarries of the nation, increased in importance during the war years because of the essential role accident-prevention activities play in protecting vitally needed manpower and in curbing interruptions in the production cycle.

NEW MEXICO

»»» The U. S. Bureau of Mines has charted 500,000 tons of low-grade tungsten ore in New Mexico, four other Western states and Alaska, according to a preliminary report issued by Director R. R. Sayers of the Bureau of Mines, Department of the Interior.

»»» Several changes have been made in the management personnel of the International Minerals and Chemical Corporation. E. C. Anderson, engineer in charge of the Gila fluorspar mill, has been transferred to the company's phosphate plant in Montana. H. L. Gardner is the superintendent of the Gila mill.

H. S. Martin, general manager at Carlsbad, has resigned because of ill health and has been replaced by George T. Harley. Mr. Harley was formerly assistant manager.

»»» K. F. Fulton of Boulder, Colo., mill construction engineer, has completed building the lead-zinc mill at Silver City for the New Mexico Ore Processing Company. The mill has been accepted by the company. E. C. Casner is mill superintendent. Production is being stepped up daily and if sufficient water is found in any of the several churn drill holes being sunk, the company expects to reach its full capacity very shortly.

Grant County is suffering one of the worst droughts in many years as reported by the Town of Silver City Water Department. The effect of this drought is beginning to be seriously felt in every mining camp.

MONTANA

»»» The Buckeye mine near Sheridan, Mont., is undergoing exploration and unwatering by Victoria Mines, Inc. Values in lead and zinc are reported. The mine was auctioned by the Standard Silver-Lead Mining Company in 1940, which put the main shaft down to the 310-ft. level, from which point cross-cutting was started. The Victoria Mines Company is also producing and continuing development from its Toledo mine in the same area, following up a program indicated by the United States Bureau of Mines drilling. The ore from these operations is being treated in the company's mill at Silver Star, north of Sheridan, in the vicinity of the Broadway, Victoria and other mines. These latter are gold mines closed for the duration.

»»» Manganese ore is being produced from the oxidized zone at the Eagle Bird mine west of Butte. The property is being operated by John and Milo Garbarini of Butte and ore is being shipped to the MRC stockpile at Butte.

»»» The Emma manganese mine of the Anaconda Copper Mining Company has resumed full scale production with the coming improved weather conditions. It is reported that eight carloads or about 400 tons of ore are being shipped daily from the property which is operated under lease from the Butte Copper and Zinc Company.

IDAHO

»»» The Coeur d'Alene mining district is now serviced with 32 flotation type concentrating mills averaging from a low capacity mill of 100 tons to plants of 1,100 and 1,200 tons daily capacity. The total milling capacity of the district is now roughly 13,825 tons daily. Three of the mills are custom plants while the balance are owned by mining companies treating their own ore. Other ore treatment facilities of the district include the Bunker Hill smelter and slag zinc fuming plant and the Sullivan electrolytic zinc plant, each of which is among the largest in the northwest.

»»» The Coeur d'Alene mining district's "silver belt" is a vast territory that will be open for investment capital after the war. Recent discoveries of large high-grade ore bodies at great depth in the Sunshine, Silver Syndicate, Polaris, Silver Dollar, Lincoln and Sunshine Consolidated mines indicate a permanent and deep seated mineral zone. Picked samples of the recently discovered ore run as high as 2,800 ounces in silver and 23 percent copper, while

picked samples of the lead ore accompanying the silver ore run as high as 82.2 percent lead and 90 ounces in silver per ton. The mill feed now being put through the Sunshine mill is said to average better than 100 ounces to the ton. This discovery has now been opened for a length of over 1,000 ft. and 800 ft. vertically on the dip of the vein. The width of the ore zone has not been determined but the exploratory drifts have been carried 8 ft. wide, all in high-grade ore.

»»» Contract for the construction of the $1,000,000 Simplot superphosphate plant at Pocatello, Idaho, has been awarded to Frank Klopfer of Boise on his bid of $131,000. When completed the plant will use phosphate rock from the Anaconda Copper Mining Company's mine at Conda, Idaho, and sulphuric acid from the acid plant of the A. S. & R. Company at Garfield, Utah.

»»» At the annual shareholders meeting of the Callahan Consolidated Mining Company, held in Wallace May 15, Donald A. Callahan was elected president and treasurer; W. F. McNaughton, vice president, and Beatrice McLean, secretary. Dr. T. R. Mason of Kellogg was elected a director. Callahan, McNaughton and Mason now comprise the board of directors for the company. The company's newly constructed mill at the Rex mine opening in Nine Mile Canyon, is now operating at a profit while the company's ore resources are said to be much improved.

ARIZONA

»»» The old Maudina mine, located on the north slope of the Santa Catalina Mountains in Pinal County, on which it is said that Buffalo Bill once expended $250,000, again is in production, now giving up strategic war metals. Twenty men are working under the direction of E. H. Molson, owner.

»»» Preliminary work on a projected 150-ton mill located at Johnson Camp, six miles north of Dragoon in Southern Arizona, and the completion of plans for a zinc smelter at Benson, southern Arizona railway point, to be constructed as a postwar project, are reported by George A. Ballam, field engineer of the Arizona Department of Mineral Resources.

»»» First test of Arizona's recently enacted occupational diseases law is seen in an appeal of the Magma Copper Company, Miami, to the State Supreme Court, of the State Industrial Commission's award of $25 weekly compensation to Rafael G. Gonzales, Magma mine workman. Under the new law a miner must be exposed for five years out of the last 10 to claim compensation. Appeal of the mines company contends that Gonzales actually was exposed for three years, eight months and 19 days, vacations, Sundays and holidays considered, instead of the four years, eight months and seven days considered by the industrial commission in granting the compensation.

»»» It has been reported in Globe that an average of 80 tons of ore daily is being produced at the old Christmas mine in southwestern Gila County, where 46 men are employed by Sam Knight Mining Lease, Inc. The mine is on lease from the Christmas Copper Corporation.

»»» Mercury production is reported for the Arizona Quicksilver mine in the Sunflower district of the Mazatal mountains northwest of Globe by the National Mine and Mill-



View of Silverton, San Juan County, Colo.

ing Company. A Gould furnace has been installed, and test runs are underway. President of the company is George L. Machris, Los Angeles, Calif.; general manager, William R. Robertson, at the mine.

»»» The Bagdad Copper Corporation mine, 75 miles southwest of Prescott in north central Arizona, is scene of a new plan of drilling out the undercuts in the caving method of ore development. Diamond drills, substituted for the conventional percussion drill, are used to drill blast holes up to 75 feet in length instead of the regular seven-ft. holes. Satisfactory results are reported by Arthur Kendall, general manager.

UTAH

»»» Two major producers of the Park City district in Utah have been forced to go on a one-shift working basis due to a serious shortage of miners.

They are the Silver King Coalition Mines Company and the Park Utah Consolidated Mines Company, both of which operated on two eight-hour shifts daily until June 12.

Approximately 100 to 150 additional miners are needed in both properties if they are to maintain their wartime production of zinc-lead-silver ores.

Merle G. Heitzman, manager of operations for Silver King Coalition, explaining the work reduction, said:

"The situation has been deteriorating steadily in respect to manpower. So we finally decided to eliminate the night shift and utilize all the miners on the day shift."

»»» New interest in drilling for potash and magnesium is being shown in eastern Utah, with deep wells to be started at once.

One of the wells will be near Woodside to seek carbonic gas for making dry ice. A well to be drilled by the Utah Potash Company will be spudded in about 10 miles west of Moab on Highway 160 where the Mack Drilling Company is erecting a 122-ft. derrick and will begin drilling as soon as casing arrives. Potash, magnesium and other minerals are sought. This well will be a mile west of one drilled by the Columbia Crude Corporation some years ago, which is said to have passed through rich beds of carnallite and sylvite.



MAN'S WELFARE—AND METALS

From a Radio Broadcast by A. G. Mackenzie, Secretary, Utah Metal Mines Operators' Association

METAL MINING—the recovery and utilization of metals—is the oldest industry in the world. Primitive man first knew the metals in their free or native state, after they had erupted in molten form from the earth's interior and were exposed by outcrop, erosion or fault. The first conversion of ore into metal probably took place when some prehistoric man built his campfire on a rich deposit and noted that the heat caused the metal to flow from the rock. He was the first metallurgist. Through the ages, others constantly improved on his process and they are still at it.

Civilization as we know it today is literally founded on metals. No home, other than the cave or hut, was possible until man fashioned tools from metal. Agriculture was inefficient toil until metal implements found their way into the fields. Transportation and communication were virtually non-existent before the age of metals. In fact, there is little we have today in the way of comfort and facility that is not the outgrowth of man's triumph is wresting metal from the earth.

The vast ore deposits of this country, particularly in the West, and the tremendous achievements of the men of the industry in making them usable have given the nation power and leadership and strength. In recognition of the great mineral resources of the West, many new plants for the refinement and fabrication of these metals have been established in the Western States in the last few years.

The ingenuity, the initiative, the self-reliance that spangle the history of American industry are brilliantly written in the record of metal mining. Men attain leadership in mining only when they have these qualities; when they are venturesome, resourceful, decisive. So, when the great and exigent demands of war came suddenly after a long period of curtailment, the industry could leap to all-time peaks of production with such rapidity that current war requirements have already been fully met and substantial reserves are available.

This was done by mining only the choicest ores and by other practices which would constitute indefensible extravagance and sacrifice of assets except in a situation of much extreme gravity. But it was done; and it was done in time.

And so, in peace and in war, man's welfare depends on the metals. The metals have met the challenge of the centuries and will meet every challenge of the future.

NEVADA

»»» George B. Austin, pioneer Nevada mining man, is planning to resume work on the famous Jumbo gold mining property he controls, when gold mining is resumed. The Jumbo mine in the Awakening district was once optioned for $10,000,000 to several Texas oil operators.

Austin has a small mill on the property designed to handle about 25 tons of ore daily by amalgamation. It was treating about 40 tons of high grade ore shortly after he took it over, by option, for $10,000 from G. C. Staggs and Clyde Taylor. He later optioned the property to the Texans. The ore is free milling and stringers have been found which make it high grade in spots.

»»» All activity has been suspended at the cinnabar property of the Pershing Quicksilver Company in the Relief or Antelope Springs district in southern Pershing County. It is now indicated that the plant, largest in Nevada and which includes an 80-ton multiple hearth Nichols-Herreshoff furnace and a 60-ton Gould rotary furnace, will be disposed of. The property was purchased early this year by H. B. Shessher and Leo F. Schmidt and efforts made to continue production; but termination of metals reserve premium prices and consequent collapse of the quicksilver market, rendered it impossible to operate without serious loss. The latest price of $85 per flask on "quick" makes it prohibitive to work.

»»» From the old camp of Virginia City come reports of shipping concentrates from the Consolidated Chollar mill below Gold Hill by the Virginia City Mining Company, a successor to several of the old big producing properties. The mill is treating ores from the old Consolidated Virginia mines. A short lease has been taken.

It is also reported that construction of the first unit of a large cyanide mill by the Central Comstock Mines Corporation is nearing completion. It

is within the town limits of the old camp and is to have a capacity of 100 tons daily. The ore is to be taken from the old Savage and Hale and other properties.

CALIFORNIA

»»» About 34 men are working on a three-shift daily basis at the Blue Moon mine, which is 3 miles north of Hornitos, Calif., and 18 men are said to be working on a three-shift basis at the mill. It is said that about one-third of these men were transferred from the Hecla mining operations in Idaho and that about 75 men are needed to produce at capacity. Development work is being done on three levels and the plant is handling about 250 tons of zinc-lead ore per day. This is an operation of the Hecla Mining Company of Wallace, Idaho.

»»» Dredging operations of the Golden Feather Dredging Co. along the Southern River near Oroville, has recovered approximately $912,185 worth of gold during the 51 months which the company has been operating. Three and a half million cubic yards of gravel averaging more than 26¢ per yard were handled. The company suspended work at Oroville December, 1943. E. A. Wiltsee, San Francisco, is general manager.

OREGON

»»» The Union Silver Mining Company expects to start production soon from its Indiana mine in the Grande Rondo district of Union County. The operation is being financed by Yakima, Wash., capital. Ore values are said to be lead, zinc and silver with some antimony. The shaft has now reached a depth of 250 ft., which is 75 ft. below old workings. The main ore body is thought to have been opened at that level. Raleigh Chadwell of La Grande is manager of operations.

WASHINGTON

»»» Drilling exploration by the United States Bureau of Mines in the Leadville area, 15 miles north of Metaline Falls, is reported to have indicated the presence of about 400,000 tons of commercial grade zinc ore. This new development provides additional strength for the already well developed Metaline Falls area.

»»» The Columbia Lead & Zinc Co., operating a property known as the Drumheller claim on which development work has been conducted for the past year, recently commenced hauling ore to the concentrator of the Pend Oreille Mines & Metals Co. Ore values are chiefly zinc, with about 15 tons being delivered to the mill per day. As soon as the mine-to-market road has been prepared, it is expected that production will be stepped up to a considerable extent.

Wheels of Government

(*Continued from page* 45)

erable conference discussion concerning this monetary metal. It has been stated that the Mexican and Chinese delegations will advocate international bimetallism, which the U. S. Treasury is expected to resist.

Meanwhile, Senator Green of Rhode Island has introduced a bill which, by amendment to the Green Silver Act approved July 12, 1943, would extend its expiration date from December 31, 1944, to December 31, 1946. The present act makes silver held or owned by the United States available at 71.11 cents per ounce for manufacturing purposes, including but not limited to the making of munitions of war and the supplying of civilian needs. It also provides that at all times there must be held within the "possession or control" of the government, silver of a monetary value equal to the face amount of all outstanding silver certificates.

WLB Hearings

Argument was heard in Washington June 28 before the War Labor Board on the Denver Non-Ferrous Metals Commission's denial of a $2 per day increase and granting of a night shift differential of 25 cents per shift, in cases involving some sixteen Utah companies as well as additional mining and smelting companies throughout the Rocky Mountain region. The 25-cent shift differential award was applied by the Non-Ferrous Metals Commission both to rotated night and day-shift workers and to workmen employed only on the day shift. Additional demands discussed involved military severance pay, release of information on physical examinations including X-ray photographs to miners, retroactivity of pay increase awards, inclusion of second "escape clause" in maintenance of membership contracts, vacation pay and sick leave.

CIO and AFL demands for the establishment of a "stabilized wage structure" throughout the West, with the elimination of geographic differentials, were met by statements of mining company representatives that the wages are stabilized when the hours worked are taken into consideration. The 25-cent shift differential was termed a plain subterfuge for a general wage increase.

Charging both miners and operators' representatives to handle many of the issues presented through local collective bargaining, WLB Chairman Davis made the positive statement that the Board has no authority to "even-up" wages. Davis and other members of the board were also critical of the 25-cent shift differential as constituting a wage increase beyond the wage stabilization rule.

At another WLB hearing held in Duluth, in late June, a special iron ore panel took testimony on the 17-cent per hour wage increase demands of the United Steel Workers (CIO), affecting 42 producing companies operating some 170 mines in the Lake Superior region. Additional demands involved a guaranteed annual wage, vacations, sick leave, severance pay, shift differential and premium pay for holidays. The effect of the increased costs involved in the demand was shown by representatives of iron ore producers to be extremely adverse to development and exploration for ew ore deposits and to the development of new processes needed to bring lower grade material into production. It was also shown that the underground mines would be seriously handicapped, and the economic status of the entire Lake region irreparably harmed. Testimony in rebuttal by union representatives was to be offered in Washington at a further hearing before the panel on July 11.

Coal Mines Returned

With the exception of the mines of the Jewell Ridge Coal Corporation in Virginia, all bituminous and anthracite coal properties were finally returned by the government to private ownership in late June, after a span of practically 13 months of federal operation. Thus the tortuous course of coal mine wage negotiation, War Labor Board consideration, and the final signing of the wage scale by operators and miners was ended for the time being.

Counsel for the Jewell Ridge Coal Corporation, which is still litigating the question of pay for underground travel-time, presented oral argument in the appeal taken by the United Mine Workers to the Fourth Circuit Court of Appeals at Asheville, N. C., on June 28. President Edward R. Burke of the Southern Coal Producers Association, stated after the argument that "the court is now in recess for the summer, but whenever it is prepared to hand down a decision in this case, it can be done without assembling the court. There is reason to believe that the decision will not be long delayed."

Manufacturers Forum

New Factory Cleaning System for Goggles and Lenses

The Brite-Ize Co., Chicago, has developed a simple "System" for cleaning goggles, glass faced dials, microscope and inspection lenses, etc., in industrial plants. Included in the "System" are: (1) Hermetically sealed ampoules of Brite-Ize Concentrate, each of which when mixed with distilled water makes a full gallon of Brite-Ize Lens Cleaner, and (2) Brite-Ize "cleaning-station" Dispensers.

Brite-Ize is said to remove fog,



grease, grime and splatter instantly; leaves no halation, will not injure rim plating, leather, fabric or rubber mountings. It assures maximum vision and sharp clean definition. By making lens cleaning easy, it encourages workmen to keep goggles clean with resulting improvement in work, reduction in accidents and elimination of eye-strain and resulting fatigue.

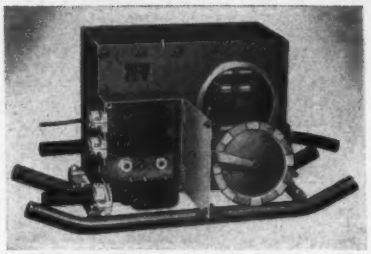
The Brite-Ize Dispensers are of the pressure type, "charged" with air, either from any standard (50-lb.) air line or with a small hand pump. At the touch of a lever they release Brite-Ize in a fine mist spray. Being entirely self-contained, they can be set on any shelf, or attached to any pillar convenient to the point of work, thus saving time spent in going to washrooms to clean goggles with soap and water.

New Gas-Proof Distribution Box

Ohio Brass Company, Mansfield, Ohio, announces the development of a new explosion-proof power distribution box for use in underground working areas. Known as the O-B Type LG gas-proof multiple distribution box, the device is designed to handle power connections for all mechanical equipment in a room and facilities are provided for three circuits. Each is individually fused, two at 250 amperes and the third at 30 amperes. It has been tested and approved by the U. S. Bureau of Mines.

Power connection are made through triple-pronged rubber plugs which fit into corresponding sockets in a plug box, located on the front cover of the device. Current is carried into the plug box through insulated plastic bushings, color-coded in accordance with the recently adopted color code. Both plug terminals and sockets are silver plated to provide low contact resistance and are arranged to prevent hook-ups of improper polarity or to the wrong circuit.

A fuse panel is located on the inside of the cover and may be reached for fuse renewals through a large screw-type handhole. Both the handhole cover and plug box lid are interlocked with the power disconnect switch to prevent access with power "on."



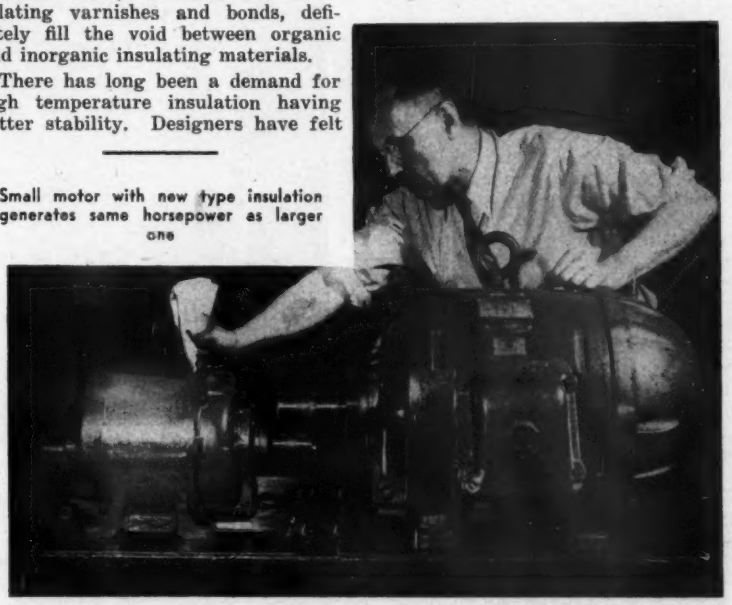
The device is enclosed within a welded steel case and all internal mechanism is mounted on the inside front cover making it readily accessible for inspection or maintenance. Hauling eyes are provided to facilitate movement as the face advances and the unit is skid-mounted for portability.

Silicone Insulation

As much as 50 percent reduction in weight of electric equipment is reported to be possible where design limitations are based on insulating temperature, by using the new Silicone insulating varnishes. These high temperature insulations also make possible a substantial increase in the output of small motors using the same frame, where the operating temperature can be raised. They operate at higher ambient temperature, and at greatly increased life when operated at present temperature conditions. Silicone resins, and their use as insulating varnishes and bonds, definitely fill the void between organic and inorganic insulating materials.

There has long been a demand for high temperature insulation having better stability. Designers have felt the need for such insulation for three reasons:

1. It offers possibilities for reduction in the size and weight of electrical equipment, with no reduction in service life, where the operating temperature can be increased because of this improved thermal endurance.
2. Greatly increased service life in the same size and weight where it is necessary or desirable to maintain present temperature limits.
3. Increased ambient temperatures which reduce limitations as to operating locations.

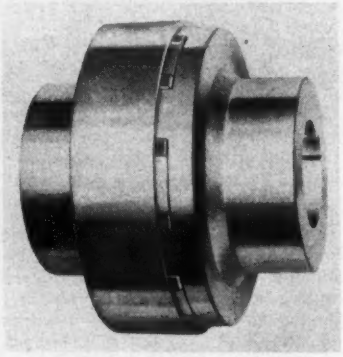


Small motor with new type insulation generates same horsepower as larger one

Lovejoy Coupling

Protection that secures operators against the catching of clothing, or incautious handling is embodied in the new L-R Type "C" shrouded flexible coupling announced by Lovejoy Flexible Coupling Company, 5009 West Lake St., Chicago 44, Ill.

The essential feature is the outside steel collar which holds the load cushions in place. An extension of this encircles the coupling, safeguards material and fingers from the heads of the bolts that secure the load cushion retainer. The boltheads are concealed, yet easily and conveniently reached when necessity arises.



L-R couplings, Type "C" class are designed for heavy duty services from 4.60 to 806 h.p. at 100 r.p.m. Individual free-floating load cushions are held in position between an inside steel sleeve, and the removable steel collar. Types are available for directly attaching to flywheel, also drum types and others for rapid disassembly without disturbing drive or driven equipment, etc. No lubrication is required. The coupling is outstandingly noiseless.

Literature and engineering information available on request.

New 18-inch Saw

Because of the demand for an in-between size pneumatic saw for contractors' operations, the Davey Compressor Company, Kent, Ohio, has developed an 18-in. tool, which is now available along with 15 and 24-in. models.

Davey pneumatic saws operate on the same principle as the cross-cut saw, and can be used above or under water. Contractors state these saws have helped solve their manpower problems, since two men can do the work formerly requiring six or eight on timber-cutting jobs. At 225 strokes per minute the saw can cut an 18-in. timber in less than one minute. The operator does not have to support the saw's weight, because an ingenious clamping device, easily operated, carries the weight of the saw, and prevents arm jerking jolts and uneven cuts. Simplicity of design permits efficient operation even if operated and maintained by inexperienced workers.

New LaPlant-Choate "Trailbuilder"

Another post-war earthmoving unit has just been announced by LaPlant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa, a cable-operated "Trailbuilder," designated as model R-82R, and designed for mounting on "Caterpillar" D-8 tractor.

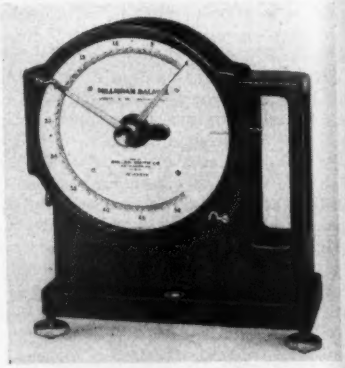
The unit retains the structural features of this company's dozer line—welded steel construction, box channel frame, box plate blade, pressed and formed sections. The cutting edge has been reinforced with more bolts compared with earlier models, while the cutting bits at either end of the blade are single plates formed to fit the ends of the blade for greater wear resistance in rock cuts. The front overhead is a new design for increased strength and better appearance.

The three-position blade can be positively angled either to right or left, or held in straight bulldozing position. Either end of blade can be tilted up or down with a variation of 14 inches while in straight bulldozing position as well as when the blade is in either angling position. This is accomplished by pulling two pins. The blade can be raised a maximum of 50 inches or dropped 72 inches below the ground line.

Improved Precision Balances

The wartime need for fast, accurate industrial weighing of large numbers of uniform loads in milligrams, grams or grains has resulted in improvements in the Roller-Smith single and double hook precision balances.

The magnetic dampener has proved invaluable in speeding up operations by bringing the balance to rest quickly with affecting accuracy. Another advantage is the use of an anti-parallax pointer and hand-drawn scale.



These new R-S balances have a guaranteed accuracy of 1/5 to 1 percent of full scale value. They can be furnished in a wide selection of scale ranges from 0-3 mg. to 0-2,000 mg., 0-3 grams to 0-50 grams and 0-10 to 0-1,000 grains.

Further details in Catalog 4550. Roller-Smith Company, Bethlehem, Pa.

Safety Award to Caterpillar



Marking another achievement for Caterpillar Tractor Co. and employes, presentation of the "S" Award for Safety was made at Tom Connor Field, Peoria, Ill., between opening games of the 1944 baseball season. Left to right: H. S. Eberhard, vice president, "Caterpillar," and master of ceremonies, Safety Engineer H. S. Simpson, President L. B. Neumiller and John M. Roche, director industrial division, National Safety Council.

Rubber Lined Pipe

Rubber lined pipe has shown its value in coal mining operations in certain territories according to a report just received by The B. F. Goodrich Company.

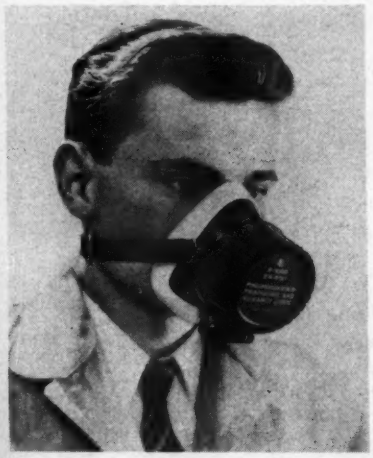
In one of the West Virginia mines, a pipe line which carried water out of the mine had to be repaired or replaced every five or six months because the water picked up sulphur and this created an acid which corroded and wore away the pipe.

Several sections of this pipe line were replaced by rubber-lined pipe and this has now been in service five years and is still in excellent condition, the report says.

New Respirator Facelets

American Optical Company, Southbridge, Mass., announces that its R-1000 respirator, developed to protect workers against certain dust, fume and gas hazards, is now being equipped with knitted cotton facelets.

These facelets make any respirator more comfortable to wear because



they are soft against the skin, absorb perspiration, and give the face a certain measure of protection against dust and dirt.

The facelets help to prevent skin irritation and do away with the necessity for protective creams to avoid face chapping. Designed to make any industrial operation more comfortable, the facelets are particularly valuable where workmen handle such products as cement, lime and gypsum, or perform operations like paint spraying.

The new AO facelets can be ordered separately. Packed 50 in a box, they can be washed and used over and over again. They will fit most standard design respirators.



5,000 k.w. Westinghouse roving power train. View taken from coal tipple at New Philadelphia, Ohio.

Foreground: stack of one of two boiler cars. Next: tank, then auxiliary power car, turbine car, and condenser cars

Manhattan Rubber Gets Army-Navy "E" Renewal

Word that its Army-Navy "E" award for meritorious service on the production front had been renewed was received by employes of the Manhattan Rubber Manufacturing Division of Raybestos-Manhattan, Inc., Passaic, N. J., in a letter from Robert P. Patterson, Undersecretary of War.

The company was presented the original award giving it the right to display the Army-Navy "E" burgee on October 28, 1943, the 50th Anniversary of its founding. The White Star, which the renewal adds to the burgee, signifies that Manhattan employes have continued to maintain the high production standard which won the original award, and it is a symbol of appreciation from the Armed Forces for Manhattan employes' continued and determined effort and patriotism.

The Manhattan Rubber Manufacturing Division makes hose for fuel, oil hydraulic controls and instruments on aircraft, and brake lining for all types of fighter planes and bombers; also, rubber aviation engine mounts for isolating vibration and a long line of engineered products for war equipment and vital industries.

Barometric Draft Control

A new series of barometric draft controls with exclusive new features has been announced by Perfex Corporation, Milwaukee, Wis.

A completely new type of hinge pivot made of spring steel assures permanent calibration after the initial setting and contributes to the sensitivity of the vane. The square vane and thimble channel allow 20 percent greater air volume than obtained with conventional round controls. Vane is aluminum for lightness, which also contributes to precision action and sensitivity.

An off-center turn-weight adjusts the action of the vane. Once adjusted, it retains its position without complicated locking or setting. These controls can be easily and quickly installed in either a vertical or horizontal pipe. Four models for pipes of 6-in. to 12-in. are available.



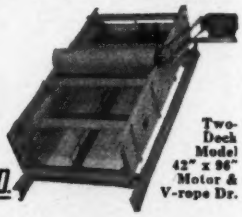
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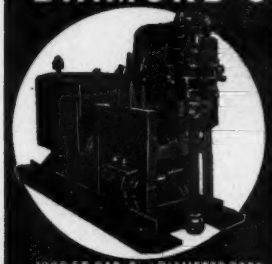
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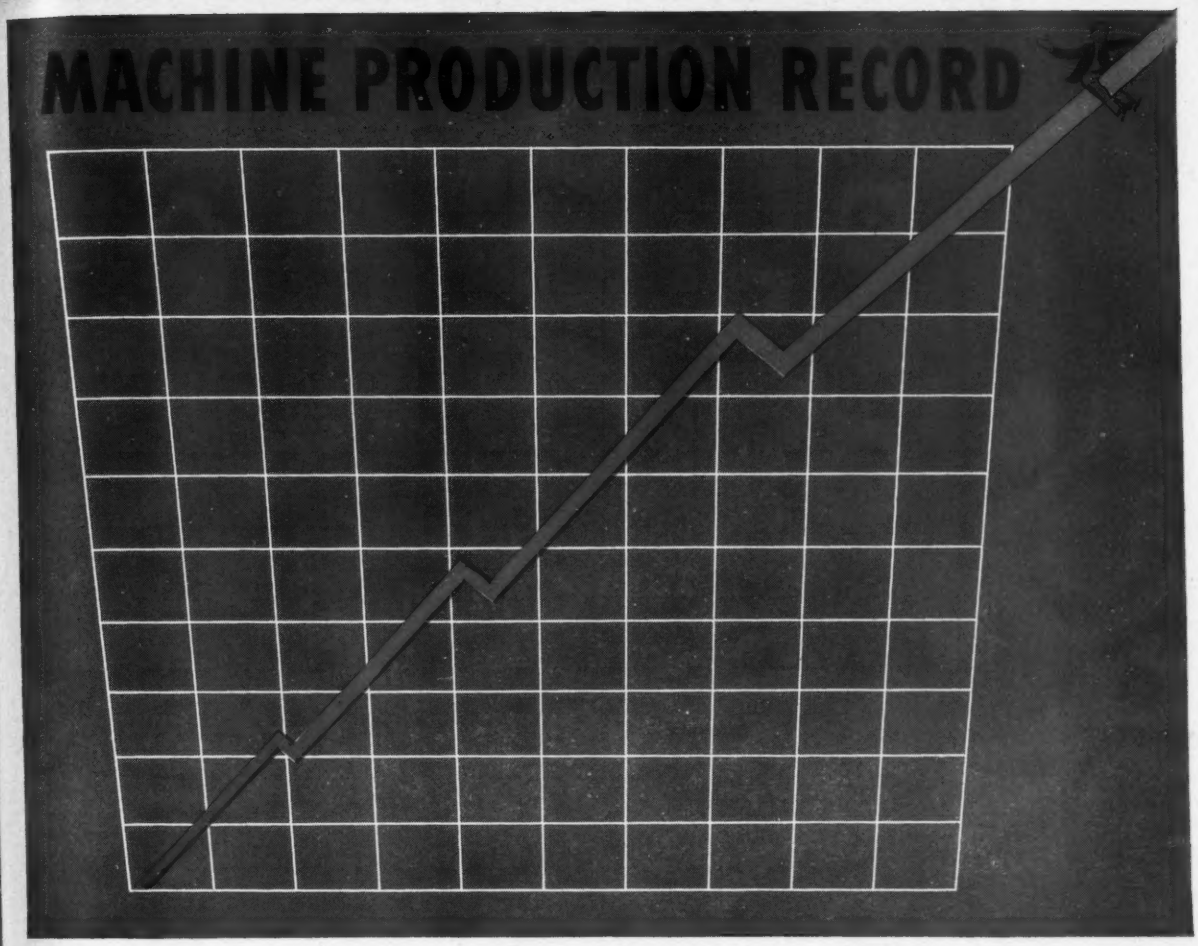
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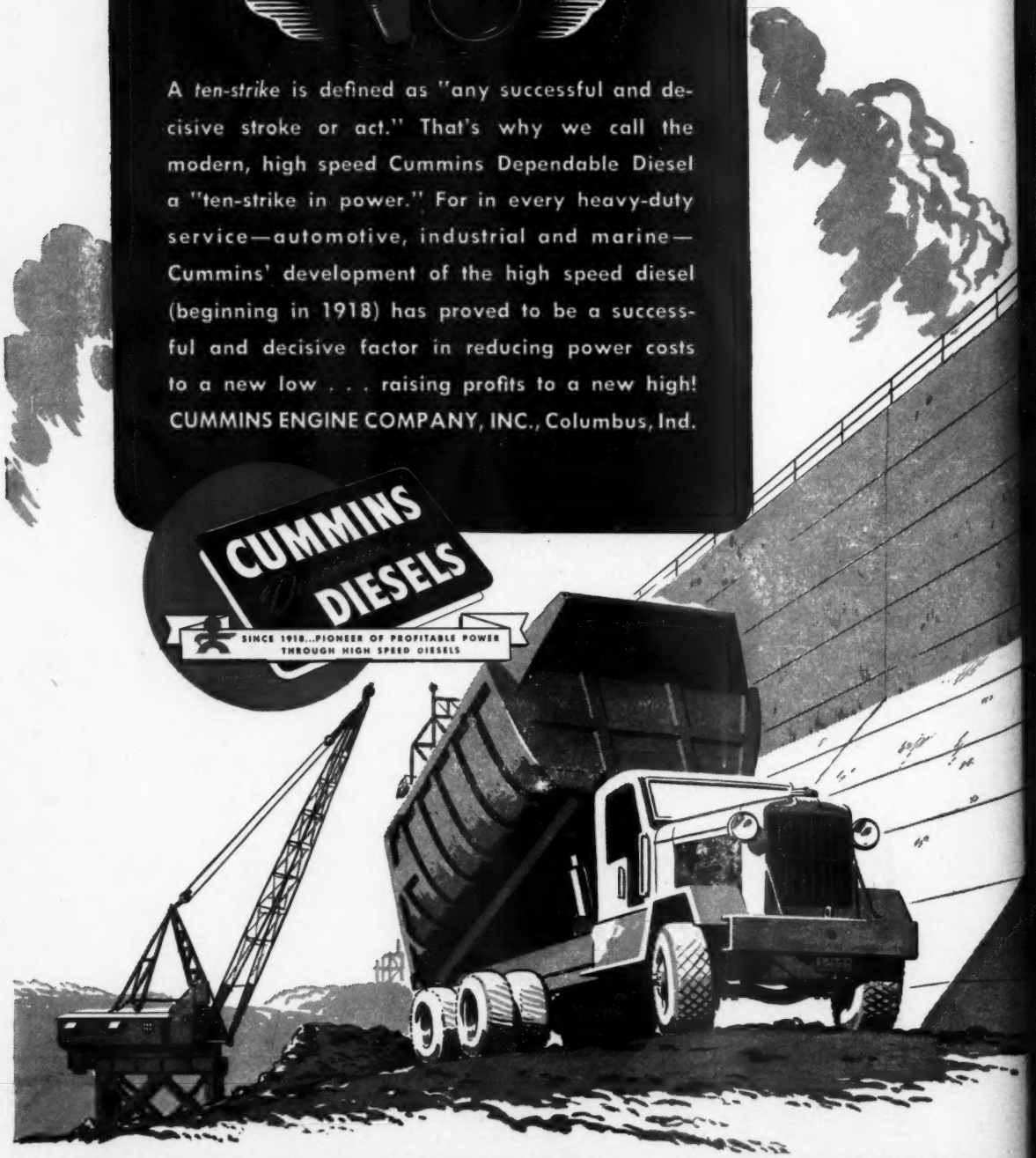


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